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TELEPHONY

The Journal of the Telephone Industry

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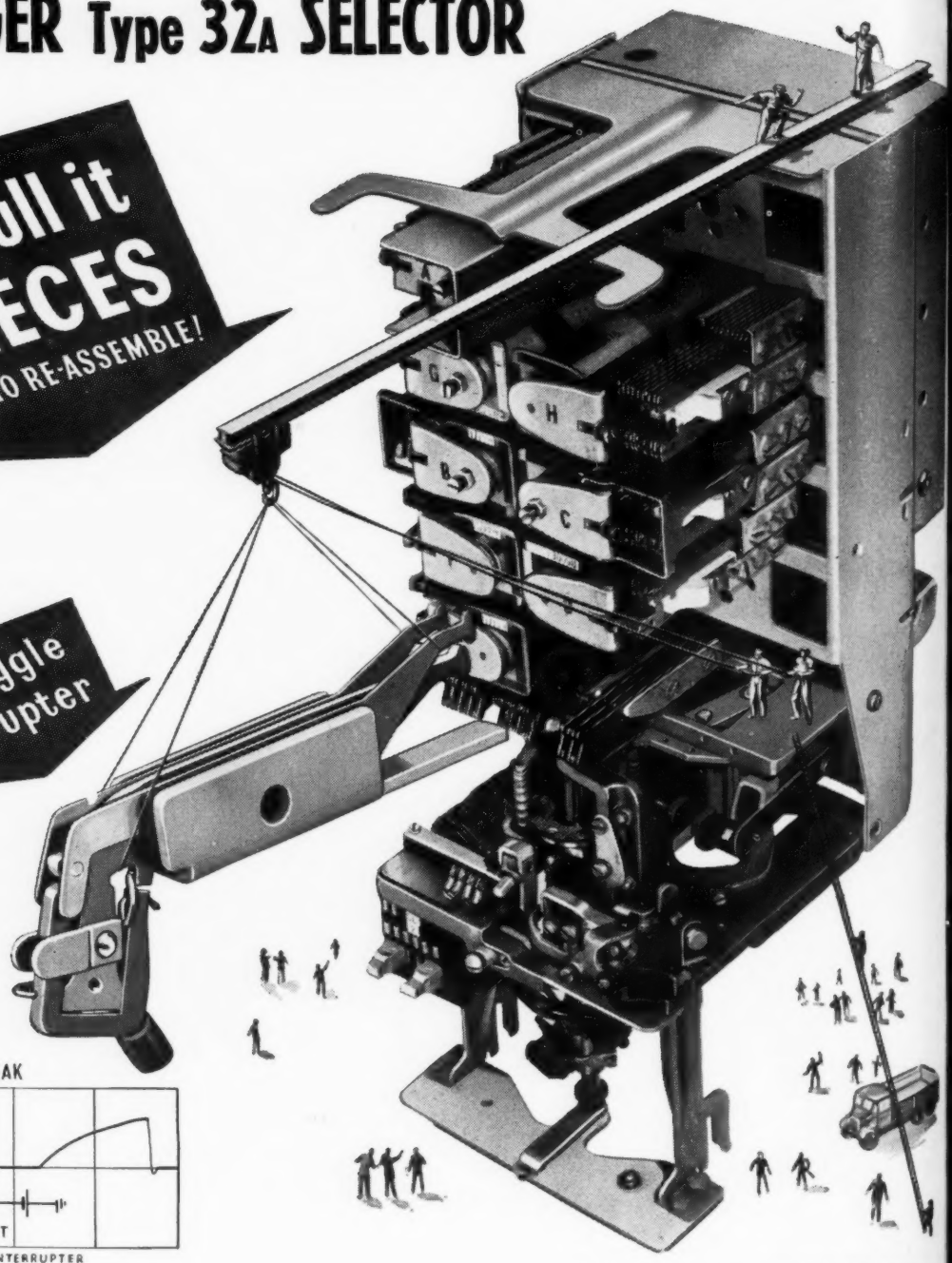
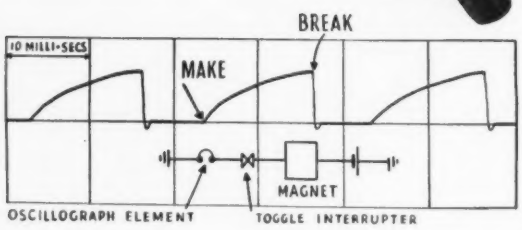
The STROWGER Type 32A SELECTOR

Let's pull it to PIECES

-IT'S EASY TO RE-ASSEMBLE!





Owing to its unit construction the Strowger type 32a Selector is easy to re-assemble.

There are many points of importance which justify the claim that the Strowger type 32A Selector is pre-eminent in automatic telephone switching technique. Amongst those to be dealt with in this series of announcements is the following.

For many years telephone engineers have been aware of the limitations of the normal type of stepping magnet interrupter.

Circuit design and maintenance experience exposed the need for a more definite relationship between the mechanical and electrical functions.

The purpose of the toggle interrupter is to break the magnet circuit at the end of the armature stroke and to remake it only when the armature has returned to a pre-determined position. This ensures a reliable and consistent action as the completion of the forward stepping motion is not dependent upon the inertia of the moving parts. Similarly, the toggle interrupter prevents the re-connection of the circuit until the pawl has definitely engaged the next tooth. The above oscillogram illustrates the absence of contact bounce; a special feature of this interrupter.

STROWGER TELECOMMUNICATIONS

fulfil the requirements of all communities—from the smallest to the largest

Automatic Telephone & Electric Co. Ltd.,
Temple Bar 9262. Cables: Autelco, London

Norfolk House, Norfolk Street, London, W.C.2
Strowger Works, Liverpool, 7, England

A7161-A2

Carlson PBX Switchboards

COMBINE BOTH MODERN CABINET BEAUTY AND TRADITIONAL OPERATING EFFICIENCY

The high quality of Stromberg-Carlson P.B.X. switchboards has been consistently maintained since the first equipment was produced in 1900. During those years, conformity with modern office appointments has become an important requirement. The switchboards shown here will meet your subscribers' most exacting needs and tastes.

Shown below: The No. 121 Cordless P.B.X. Switchboard is a modern example of what can be done in housing mechanical equipment in fine furniture cabinets. Available for quick delivery in two standard models: 1-16 lines, 5 trunks, 5 connecting circuits with line relays; 2-12 lines, 3 trunks, 5 connecting circuits with line relays. Connects with any central energy exchange, manual or dial. 26¾" long, 14" high, 14¾" deep.

TELEPHONES, SWITCHBOARDS • SOUND EQUIPMENT, INDUSTRIAL AND INTERCOMMUNICATION SYSTEMS • RADIOS, RADIO-PHONOGRAPHS, FM AND TELEVISION

FLASHES AND PLUGS

WAS IST DENN LOSS? Old-time Milwaukeeans still recall the incident in 1877 when the late Valentine Blatz, beer magnate, finally consented to have a telephone installed in his office.

When the telephone rang a few minutes later, Herr Blatz answered it and talked for a while. Then he turned to the telephone man.

"Very interesting," he said. "But it really is no help to me. Most of my friends and business associates speak German. And this thing speaks English."

• • •

HOW TIMES HAVE CHANGED. The receptionist for Mayor Edwards of Richmond, Va., placed a call to Washington to one of the state's congressmen whom he described as a "dyed-in-the-wool Democrat." He told the local operator the gentleman could be reached in the House of Representatives.

His indignation knew no bounds when he heard the operator carefully tell the Washington operator that the congressman could be reached in "the House of the Republicans."

• • •

CRISSCROSS. Burglar alarms from the Bank of Montreal, Canada, rang in police headquarters twice in one evening recently. Squad cars sped to the scene, but the bank was not being tampered with. Officers finally found the trouble.

An electrician had connected part of the bank's burglar alarm system with a telephone circuit of a house across the street. Every time the telephone rang the burglar alarm went off.

• • •

THE FLYING LINEMAN. Darius Green and his flying machine had nothing on the high hovering lineman employed by a western utility company. To inspect transmission lines in northern California's rugged Sierra Nevada mountains, the company has signed a contract with a helicopter firm. It was decided that helicopters, with their ability to hover over a given spot, could do the inspection job far more quickly and efficiently than linemen traveling on skis and snowshoes.

• • •

ENOUGH IS ENOUGH. Mrs. Angelo Demarco of Joliet, Ill. made a strong complaint to police recently. Some joker is driving her wild.

First it was mysterious telephone calls. The telephone would ring, Mrs. Demarco would answer, and the other party would hang up.

Then came a dairy man with four quarts of milk he said she had ordered. She said she hadn't. A butcher called with two pounds of steak. In rapid succession the following were delivered:

Four cases of beer.

Two heads of lettuce.

Three loaves of bread.

Six bottles of a soft drink.

A pound of butter.

Mrs. Demarco sent them all back.

Lastly, a plumber came to the door and said he had come to fix her bathtub.

Mrs. Demarco called police.

TELEPHONY

The Journal of the Telephone Industry

April 10, 1948

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U. S. A.

The Completed Call—

YOUR STOCK IN TRADE

By R. W. HAYES
General Traffic Manager
Northwestern Bell Telephone Co.

The completed call is the only thing the telephone industry has to sell and all units in the business must cooperate to complete and speed up local and toll calls. Address before recent Minnesota Convention.

EVERY minute of every day you (Independent companies) and we (Bell System) are called upon to act jointly and as a team toward an identical end, that of making it possible for two people to talk together wherever they may be.

It is elementary, of course, to say that that is what we are all in business for, and yet I do so to direct your attention to a fundamental of the business to which the Northwestern Bell Telephone Co. is devoting a great deal of attention, and which it considers to be a matter of first importance today —the completed call.

Because we are in this business together I know that this subject is as interesting to you as it is to me. The telephones that the industry serves are inter-connected and so the responsibilities, the problems, and the progress of the different units of the industry are closely interwoven. The only way that we can serve our mutual customers efficiently and continue to serve them better as the years go on is by working, thinking and planning together on all of our common problems.

It goes without saying that the completed call is our only stock in trade—the only merchandise we have to sell. From the standpoint of our customers this is a most significant measure of service value.

Just prior to the war completions of both local and toll calls had been brought up to a very respectable level. In St. Paul, for instance, we were completing better than 81 per cent of our local calls and nearly 92 per cent of our toll calls which is fairly typical of our general completion results over the state as a whole.

We are all too familiar with what happened during the stress and strain of the war years and the years just following. Using St. Paul again, our local completions dropped from 81 per cent down to 74 per cent last year. In other words, we were delivering on only about three out of four orders. Toll completions were off from 92 per cent to 80 per cent, or we dropped from about nine deliveries out of 10 orders to only about eight out of 10. Putting it another way, the quality of our merchandise deteriorated considerably.

In addition, a revenue source was severely depreciated. It has been estimated that an improvement of 3 per cent in the toll completions in the Northwestern company territory is worth about one million dollars annually in revenue in which we would all share. This was not entirely the industry's fault. In fact you don't need me to tell you that actually a magnificent job was done by all units of the industry to complete calls under the staggering difficulties imposed by war conditions.

We have ample evidence that both the public and the government recognized that fact. But the war has been over for two years. Improvement of service today is the thing the public needs and the goal toward which we are mutually working. . . .

While I am on the subject of expected toll volumes and our plans for handling them, let me say something about revenues and advertising. From our own observations, plus what our advertising agencies tell us, a period of intense competition for the consumer's dollar may be fairly close irrespective of whether prices rise or income falls.

For nearly six years there has been no effort to make people want telephone service, either local or long distance. In fact, for a considerable part of that time the effort was to get them to use less of it and not more. Evidence that this restrictive type of advertising lives a long time is given by the fact that in a survey of public opinion carried on last summer 57 per cent of the persons covered remembered advertising limiting long distance calls—although most of this advertising was done during the war and there had been none of it in national magazines for two years.

With competition for the consumer dollar expected to get tougher, it does not seem wise to urge people to be brief or to place any limitation on the use of telephone service. For there will come a day when we will not care how long they talk, and we will be urging that they talk for longer periods.

In looking ahead for this year and next a number of good advertising themes suggest themselves for consideration when the time becomes right to use them. There is the story of how cheap long distance service actually is. Most people guess about 40 per cent too high when asked the price of a call. Advertising designed to establish the low cost of typical three-minute calls might do more than merely increase business. It might help to balance some of the criticism of increases in local rates. In addition, the increased use of long distance would serve to point up the need and value of the telephone in the home or office. Fre-

quently a long distance call is a dramatic and spectacular example of this value.

I don't want to pursue this point too far, nor do I wish to create the impression that we are starting out on a promotional campaign while we are still having difficulty handling present business. But, I am sure that years of practical operating experience taught that the pendulum always swings as far in one direction as in the other, and that today is a good time to be thinking and planning for the trends that will surely develop tomorrow.

Now I would like to mention some of the specific practices that the Northwestern company is considering with the idea of improving the per cent of calls completed, both local and toll. As a matter of fact, while I shall talk about local and long distance items separately, they are pretty much interrelated since the things that interfere with local completions also interfere with the completion of toll calls.

The importance of local completions is illustrated by the fact that 25 per cent of the unfavorable service reactions received from customers pertain to the failure to complete local calls. Poor completions make for more difficult operating conditions which, in turn, are a potent cause of increased operating expense.

One of the most effective ways to improve local completions is to be found in a careful study by the manager and chief operator of the facilities and usage habits of customers. Such a study for instance will reveal excessively busy lines, which presents sales opportunities for more lines. It will also show up cases of non-consecutive lines which could be grouped to make for easier operating. Also such a study will show customer lines where the called party may frequently fail to answer. This would suggest opportunities for sales of extensions, extension bells, gongs and other supplementary equipment. It would also indicate situations where the calling party does not wait long enough for the called party to answer.

We have found it quite profitable to study abandoned calls to see if operating errors or irregularities may have caused or contributed to the failure to complete calls. Another point to which we give attention is the interval at which "don't answer" reports are given to the calling party. We sometimes find that we are not waiting long enough in giving out these reports and are adding to completion failures by our own impatience.

Many of the causes of uncompleted calls lie outside of the operating room and can best be attacked by plant and commercial forces. We know for instance that plant trouble accounts for many of the completion failures in the dial offices, but it is also a source of a certain per cent of uncompletions even in manual exchanges. We know too that many times in cases of abandoned calls, or calls on which a "don't answer" was given the customer, it was really plant trouble that was at the bottom of the failure.

Advertising and interviews with customers designed to sell them on the ideas of answering telephones promptly and to wait a reasonable length of time for the called party to answer will help materially to improve completions. Party line difficulties are a prolific source of failure to complete calls. People sometimes have to resort to all kinds of subterfuge to get a call through, such as the business man I read about the other day, who, after trying patiently for what seemed like hours to get the farm line to which he was connected, finally announced in a very agitated voice "Ladies, your dinner is burning up." There were several horrified gasps and half a dozen receivers promptly clicked up, and our friend was able to make his call. When it is again possible to offer private line service in town and to reduce the number of farm line parties, completions should improve substantially.

Now let's take a quick look at some of the operating conditions that affect toll completions. We find that the attitude of the individual operator has a tremendous effect upon completions. A recent analysis in 12 cities showed that 75 per cent of all toll calls cancelled were caused by "busies," "don't answers" and "called party not in."

All of these items lie within the operator's discretion to attempt to remedy. A great deal of our supervision is directed to building up the right frame of mind to teach attentiveness, distinct speech and to build up an interest in completing the call. During the war years we encouraged customers option to cancel calls by inquiring, "Shall I make further attempts." We now approach a failure to complete by telling the customer, "I will try your call again."

It has been our experience that completion of toll calls is best assured if the calling party is held on the line while the first attempt is being made, but when this does not occur the next best thing is a definite time when another attempt will be made and the call completed or the pursuit continued until it is completed.

Along with good attitude, adherence to operating practices is essential to getting good completions, and just for the record I am going to mention quickly and briefly nine specific items of failure that we have picked out for special attention and remedying:

(1) Failure to attempt to reach the called party at a second telephone.

(2) Failure to ascertain whether the calling party wished to talk with an alternate.

(3) Failure to suggest messenger service when appropriate.

(4) Failure to have the called party paged on calls to hotels and clubs.

(5) Failure to secure definite information from the calling or called station which will permit later completion when delay is encountered.

(6) Failure to follow up delayed calls in accordance with the operating practice.

(7) Failure to keep the calling party properly advised as to the status of his call.

(8) Failure to secure disposition and to handle "hold" and AG "time" calls as requested by the customer.

(9) Failure to take proper action on receipt of "ready to talk" reports and "try again" requests.

One factor in toll completions the importance of which goes without saying is the necessity for close cooperation between the originating and terminating offices. As you know, in recent years many of your towns are doing more of your own operating into toll center and toll center tributary points. This results in faster service, of course, but it also makes what I have been saying about the importance of completions of even greater importance in your offices than perhaps it has been in the past.

I know that these operating points are perfectly familiar to all of you. My only purpose in mentioning them has been to emphasize how important we in the Northwestern company feel it is to improve completions, and to outline some of the steps we are taking toward that end. To improve completions, of course, is just another way of saying to improve service and revenue.

Fifty years ago there were hardly more than 500,000 telephones in the whole country. Methods of operation were cumbersome and transmission was severely limited, and the equipment in use at that time was hardly capable of doing any better. Today, with the development of equipment, which can perform far beyond the most adventuresome imagination of 50 years ago, telephone service is incomparably better in speed, in quality and range of transmission and in all around convenience to the user.

Today, there are more than 33,000,000 telephones in the United States—more than 65 times as many as there

(Please turn to page 34)

IN THE NATION'S CAPITAL

BY
FRANCIS X. WELCH
WASHINGTON
EDITOR

C&P's Virginia rate case brings up interesting discussion on question of allowable rate of return by two economic experts. . . . General MacArthur's "no strike" order to Japan's communications workers discussed.

THE recent decision of the Virginia Corporation Commission to permit the Chesapeake & Potomac Telephone Co. to increase telephone rates in the Old Dominion state by $1,440,000 a year, threw an interesting regulatory spotlight on the importance and timely question of allowable rate of return.

In these proceedings, opponents of the rate increase spent considerable time and effort in rebutting the argument of D. R. Belcher, treasurer of AT&T, that a "fair rate of return" of 6.75 per cent on investment capital was required in order to attract additional capital for the Chesapeake & Potomac company's expansion and to meet higher price levels.

The best feature of this proceeding—from the disinterested standpoint of a modern regulatory student — was the high plane duel between two economic experts, Dr. Ralph E. Badger, Detroit investment counsel, and Dr. Herbert B. Dorau, New York University economics professor. Compared with some of the more vituperative and argumentative proceedings in some other states, the Virginia case was an intellectually pleasant experience. Dr. Badger, as witness for the Virginia Corporation Commission counsel, started the ball rolling with an expert opinion to the effect that a fair rate of return on capital investment for the Chesapeake & Potomac Telephone Co. should not be in excess of 5.75 per cent.

In attempting to prove that additional rate charges are not necessary, the corporation commission counsel developed an attack based on tables prepared by Dr. Badger. These showed that the cost of money to corporations, acquired by the issuance of stock, has decreased during the past 28 years.

"It is my opinion that the Chesapeake & Potomac Telephone Co. of Virginia could sell an issue of bonds presently at a yield to the public of 3.15 per cent," Dr. Badger said.

"A charge of 1.07 per cent in the price of a 35-year 3 per cent bond selling at par, results in a change in yield of .5 per cent. If underwriting and corporate costs in the amount of 1.07 per cent were applied to the yield to the public of 3.15 per cent the cost of raising funds by additional bonds at the present time would be 3.20 per cent."

The witness pointed out that the cost of money or capital has declined materially since 1930. He said: "Cost of money or capital acquired by the issuance of bonds or preferred stocks, both being fixed charge obligations, has declined materially since 1930. Cost of money to corporations, acquired by the issuance of stock, has likewise decreased during the past 28 years, as expressed in terms of earnings in relation to price ratios."

Referring to a chart showing the operating revenues of the C&P, Dr. Badger declared, "I would like to call attention at this point to the unusual characteristic in respect to the trend in operating revenues. During the years 1920-1940, inclusive, earnings were increasing at an annual rate of 4.26 per cent."

Delving into the corporate structure of the American Telephone & Telegraph Co., parent organization of the C&P company, Dr. Badger said: "Average earnings of the AT&T for the period 1936-1946, inclusive, were in the amount of $9.64 a share. The lowest earnings during the period were produced in the year 1938 when such earnings were $8.32 a share."

He added: "I would like to call attention to the fact that throughout the entire period (1920-1947) earnings in relation to price ratios as established by the common stock of the AT&T company and as established by the Cowles Commission index of utilities, telephone, and telegraph companies has shown a consistent tendency to decline.

"This," the Detroit expert explained, "indicates to me that at the present time prospective investors in the common stock of the AT&T have been willing to accept less in the way of annual earnings for each dollar invested than was the case of the early 'twenties.'" Dr. Badger voiced the opinion that the AT&T would be able to float stock to the public today at a lower cost in terms of earning than it could have done in the early "twenties."

In reply to a question by the Virginia Corporation Commission counsel, Dr. Badger presented exhibits showing that the average annual yields in many investments have dropped during recent years. He explained that AAA public utility bonds earned an average of 2.5 per cent in 1946 as compared with 4.5 in 1930; AA bonds, 2.57 in 1946 against 4.75 in 1930; and A bonds, 2.66 as compared with 5.06. Slight increases were noted by Dr. Badger for 1947, but he predicted that the present level would be continued during the next several years.

One of the exhibits prepared by Dr. Badger showed the ratio of earnings to price of stocks in Barron's index had dropped from 15.8 in 1920 to 4.51 in 1946. This figure returned to 8.45 in 1947, but Dr. Badger told the Virginia commission that he felt this a temporary condition because of an unusual demand for goods and because of appreciation of investories.

His testimony stressed the fact that financing is cheaper now than at any time during recent years.

Dr. Dorau, as witness for Chesapeake & Potomac Telephone Co., did a fine job of parrying the foregoing arguments by Dr. Badger and getting in some of his own which the commission evidently thought were better, in view of the resulting rate increase order. Dr. Dorau picked up earlier statements

made by Mr. Belcher, AT&T treasurer, who defended the company's request for a minimum of 6.75 per cent return as necessary to carry out the Bell System responsibilities.

Dr. Dorau said, "In the face of a great many uncertainties as to the capital market for substantial amounts of equity capital, I believe it ought, for the nearer term future, be not less than 6.75 per cent and in recognition of the high present level of business activity might well be 7 per cent." Both Mr. Belcher and Dr. Dorau emphasized the need for a higher investment yield in order to attract capital.

Stressing this point, the AT&T treasurer declared that the Bell System earnings have declined steadily from prewar levels. "Investors cannot be oblivious to these divergent trends," Mr. Belcher said. "They realize something more than average must be made in prosperous times, and that unless the downward trend in Bell System earnings is reversed and the earnings rate restored to an adequate level the Bell System will not be able to compete favorably with other industries for the huge quantities of new capital needed."

Warnings that a real crisis is developing in the public utility capital field were stressed by Dr. Dorau. "There is a growing opinion that a real crisis in the public utility capital supply is possible and that by no means all need for equity capital can or will be satisfied," he said. "The Securities and Exchange Commission publicly expressed its concern about the increasing inability of electric utilities to obtain equity capital and maintain a conservative capital structure."

At this point he showed that financing costs are increasing. *"Very soon we are going to see bond salesmen out in the streets ringing door bells,"* he declared in emphasizing that it was becoming more difficult to get investors to place their money in utility bonds.

A humorous note was sounded by C&P counsel when Dr. Dorau introduced bound volumes of his exhibit which contained 103 pages of testimony, plus two appendixes, one covering 25 pages and the second four pages. "I told Professor Dorau that this is putting evidence in a capsule form," T. Justin Moore, C&P attorney, said in explaining that introduction of the exhibit would cut down testimony by several days. The exhibit was referred to several times during the hearing but was not gone into in any detail.

Under the questioning of C&P counsel, Dr. Dorau outlined several factors relating to the demand for additional investment capital. "The rush for investment capital is on and there will not be enough to go around at anywhere near the old capital cost levels," he declared. "Only those industries capable of commanding an adequate future return will be able to command their share of the investment funds available at attractive cost levels."

Among the reasons given by Dr. Dorau for the increased demand for investment loans are the postwar boom, accumulated deferred demand for durable consumer goods, and increased industrial plant desires. "The higher price level and large volume of business creates the need for more dollars," he explained. "Higher inventories and higher equipment replacement costs require more dollars. On top of the material increase in the demand for capital on account of the higher price level and the volume of business, there is an unprecedented demand for capital to finance new construction."

The AT&T treasurer said that the entire Bell System plans a $2 billion expansion program within the next few years. "For the past year or more, the Bell System has been in the market for additional capital at the rate of more than $1 billion per year, and we are currently continuing to build our new plants in volumes which require further substantial additions of capital. In my best judgment we are going to need additional capital in the order of $2 billion to be raised from investors during the next few years."

The resultant rate increase authorized by the Virginia Corporation Commission allowed 25 cents on residence telephones and 50 cents on business telephones. An earlier increase of about 10 per cent was approved by the Virginia commission in January, 1947, and was the first rate increase for the C&P in Virginia in about 20 years.

• • •

Telephone and telegraph men in the United States — not to mention coal mine operators and federal labor officials—might envy Gen. Douglas MacArthur's prompt and forthright way of avoiding a communications strike. They also might wonder how it is the general manages to get such compliance from the rank and file.

It was on Mar. 29 that Tokyo dispatches to Washington indicated that the strike of more than 1,000,000 communications workers in Japan was scheduled to take place two days later. Such a strike would have silenced telephone and telegraph lines throughout the occupied area. General Douglas MacArthur said "no" and that was that. This is the second time since occupying the defeated nation that the general used his personal veto, as commander-in-chief of the Allied powers, in order to ward off a blow at industrial recovery by the very labor unions his headquarters had helped to organize.

General MacArthur's decision was communicated to the Japanese cabinet and two hours later the government of Premier Hitoshi-Ashida announced that it would penalize participants in the series of "piston strikes" in government offices which has disrupted administration in recent days. Of course, as head of the occupying army, General MacArthur is in a position to order a lot of things which are beyond the powers of the federal government in the United States. But occupation authorities have not always obtained such obedience from recalcitrant workers, as the Nazi generals learned in France.

General MacArthur's strike ban was coupled with a warning that any labor leader who defies his order would be jailed. The warning was delivered by James Killen, chief of the general's labor division, to cabinet members, Eiji Tomiyoshi, Communications Minister, and Kanju Kato, Labor Minister, and then to the leaders of the National Communications Workers Union, who were summoned to Mr. Killen's office. The labor leaders were closeted with Mr. Killen for an hour and a half, and then went into executive session at their homes.

It was generally assumed by Tokyo's newspapers that the labor leaders would call off the strike even though they were not forced to go on the radio to do so, as were the leaders of the abortive general strike which General MacArthur banned on Jan. 31, 1947.

After the meeting between the cabinet ministers and Mr. Killen, General MacArthur's headquarters said Mr. Killen had given the ministers a memorandum from Maj. Gen. W. F. Marquat, chief of the headquarters' economic section, saying that the scheduled communications strike was subject to the "provisions of the statement of the supreme commander for the Allied powers" of Jan. 31, 1947. That statement prohibited a general strike on the grounds that it was "too deadly a social weapon in the present impoverished and emaciated condition of Japan."

Japanese, recalling that statement, also could remember that when it was read to leaders last year it was accompanied by General Marquat's verbal warning that anybody disobeying General MacArthur would be "imprisoned and severely punished." Just to show

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telephony's *SAFETY* bulletins

No. 3—Safety on Stairways. Watch the little things—like taking a step at a time—and you have the answer to safety on stairways. In this bulletin a few of these little stairway safety items are discussed to help you make every stairway a "careway."

by FRANK E. LEE

MAKE every stairway a "care-way." At first glance the subject of stairways offers little opportunity for a safety discussion. However, a large percentage of all the accidents that occur in homes or telephone buildings are caused by lack of care on stairways.

Lack of care on stairways includes many pertinent items.

USE OF STAIRWAYS

Stairways are built with steps spaced scientifically for one step at a time. Taking more than one step at a time interferes with proper vision and prevents secure placement of each foot on the steps. Once secure footing is lost on a stairway, regaining balance generally is impossible. A serious and painful injury may result.

Hurrying up or down stairways which are being used by others is a dangerous practice because of the possibility of knocking other persons off balance and causing a nasty fall.

HANDRAILS

Always safe is the practice of holding the handrail with which each stairway should be equipped. Especially is this true of the fair sex because high heels present a definite hazard on the stairways. A grip on the handrail lends security and better balance.

Handrails must be inspected regularly to be sure they are fastened securely and are not splintered or cracked. Also, keep the entire handrail clean because a dirty handrail will discourage women from using it.

A little sign or decal to remind people to use the handrail is an effective means of encouraging safety consciousness on stairways and, thus, cutting down on accidents.

MATERIAL ON STAIRWAY

Piling of material or boxes on stairways always is an accident hazard and means should be provided to avoid this practice.

Ash stands and waste baskets ought to be placed in convenient locations to avoid careless disposal of cigarette or cigar butts. Even a small scrap of paper lying on the edge of a stair step may cause someone to slip and lose his balance. In addition to a waste basket on the larger floor landings, frequent sweeping and cleaning will help to keep paper and other small objects off the stairways.

LIGHTING

Adequate lighting is *a must* on every stairway. Replacement of burned out stairwell bulbs rank high on any alert safety program.

CARRYING SUPPLIES

When carrying supplies up or down stairways, a safe practice is to have one hand free to hold the handrail. Too large a load may obstruct the vision and lead to a missed step and a fall.

Also, a good practice is to avoid using stairs while heavy loads or unwieldy objects are being carried up or down by other persons. In this way if the load slips or drops, you will be out of danger.

HORSEPLAY OUT OF PLACE

Horseplay is out of place anywhere in the telephone business—especially is this true on stairways.

ICE ON STAIRWAY

During winter weather whenever icing is possible, measures should be taken to keep outside stairs safe. Rock salt, fine ashes, special mixtures of sand and salt, or other no-slip preparations should be on hand ready for use on the stairways as needed.

SUBSCRIBERS' STAIRWAYS

All telephone people who visit subscribers' premises must be alert at all times to guard against getting hurt whenever subscribers' stairways are used. To prove this statement, make a list of all the hazards observed on subscribers' stairways in one week's time. You'll be amazed.

STAIRWAYS IN THE HOME

Generally the most flagrant misuse of stairways in the home is leaving or storing objects on them. Many telephone people make a regular safety inspection of their homes.

On stairways in the home check for:

(1) Adequate lighting.

(2) Objects or clothing on stairways (especially basement stairs).

(3) Loose or worn carpeting.

(4) Unguarded stairways where small children are concerned.

Yes, stairs are simple things. They were among the first ideas developed by man as an aid to making his work easier. But since that time people have been falling down stairs. That's why it is well to give a little thought and consideration to the use and maintenance of stairways. When you do this you make every stairway a "care-way."

Why be in a hurry?

You have time for safety.

A Selected List of Telephone Books

For Telephone Employes and Libraries

• ***How to Build and Repair a Farm Telephone Line*, published by Telephony Publishing Corp.**
Eight-page booklet, unbound, 25 cents per copy to non-subscribers of TELEPHONY; special prices available to subscribers and to anyone ordering 25 or more booklets. This booklet, well-illustrated with photographs and diagrams, tells what was done to place a run-down farm line in good condition to furnish excellent service. The text describes how to attach wire to an insulator, how to attach brackets, how to set a pole, how to string wire, how to make a splice, how to protect telephone line from power line hum, how tree branches touching wires hamper transmission, how to connect drop wire to line wire, how to attach drop wire to house, how to connect house line to telephone, and how to connect the ground rod. The materials needed for a farm line are also listed.

• ***Rural Telephone Trouble*, published by Telephony Publishing Corp.**
Four-page reprint of an article published in TELEPHONY giving 33 magneto telephone and line troubles most commonly encountered, with suggestions as to the most likely cause of each—whether in the telephone set, the protector, the line, or the central office. Cost is 25 cents per copy to non-subscribers of TELEPHONY; special prices available to subscribers and to anyone ordering 25 or more reprints.

• ***ABC of the Telephone*, published by Telephony Publishing Corp., 84 pages—8½ ins. x 11 ins. Prices: One copy, $1.50; two to 25 copies, $1.35 each; 26 to 50 copies, $1.20 each; 50 or more copies, each.....$1.05**
Reprint of first 21 installments of article by Frank E. Lee running currently in TELEPHONY. Covers fundamental information concerning electrical circuits, telephone transmitters and receivers, induction coils, generators, ringers, relays, line protection, dials, automatic switching, drop wire installation. Particularly beneficial to beginners.

• ***Handbook for Telephone Managers and Engineers—Vol. I.* Published by Automatic Electric Co., 1033 W. Van Buren St., Chicago, Ill. 294 pages (illustrated).....$3.00**
Deals primarily with design, construction and maintenance of outside plant and also includes introductory sections containing mathematical and engineering data, formulas, tables and other material of a general nature.

• ***Telephone Handbook of Standard Outside Plant Construction Methods—Book No. I.* Published by Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago, Ill. 365 pages (illustrated).....$3.50**
Covers standard outside plant construction practices, pertaining to pole line and long span construction. Seven sections are subdivided into more than 100 parts. Subjects are cross-indexed.

• ***Fundamentals of Telephony*, by Arthur A. Albert (1943) 366 pages.....$3.75**
This elementary book, intended for beginning students and for telephone workers, is devoted exclusively to telephone communication. The first four chapters present briefly the principles of electricity and acoustics upon which telephone practices are based. The book then considers the following subjects: Telephone transmitters, receivers, telephone sets and circuits, telephone lines, manual telephone systems, dial telephone systems, loading, telephone measurements, noise and cross-talk, and repeaters and carriers.

• ***Electrical Fundamentals of Communication*, by Arthur L. Albert (1942); 554 pages.....$4.00**
This book deals with fundamentals of electricity as applied to communication, including telegraphy, telephony, and radio. Contains basic electric circuits and phenomena using illustrations, terminology and problems from communication industry standpoint. Contains tables and 359 excellent drawings; is non-mathematical and clearly written for communication people having little or no college training. Especially suited for use in telephone training courses for new employes. Also valuable for employes who wish to extend their knowledge of electricity. A summary as well as review questions and problems given at end of each chapter.

• ***A Telephone Rate Case*, by Edward D. Smith (1941); 223 pages.....$5.00**
Written simply and clearly by an attorney for a telephone company, this book gives a bird's-eye view of the general rate regulatory background, and then outlines the steps for preparing a telephone rate case. Company executives as well as legal counsel dealing with rate matters will find much valuable and helpful information in the book. There is a comprehensive table of case references.

• ***Soldering for Workshop, Farm and Home*, by John Bonert (1941); 111 pages, 28 illustrations.....$1.25**
Valuable soldering information for telephone plant men, particularly apprentices, is presented in this book written by a telephone man with years of practical experience. The book discusses soft soldering, fluxes, tinning, soldering coppers, wire splices, soldering on lead, closing seams in a split cable sleeve, soldering and sweating with a torch, joints, hard soldering or brazing, construction of a soldering copper holder and pad, etc. No scientific terms or complications have been used in the book, which is intended to help the beginner or to refresh the memory of an experienced worker.

• ***Electrical Communication*, by Arthur L. Albert (1940); 534 pages (second edition).....$5.00**
Presentation of electrical theory of communication, including vacuum tubes, networks, filters, and discussion of entire industry. Various subjects considered as related to one another in modern communication systems. Designed as a college textbook and reference book for those having technical training. Others will find much of value in it, as use of mathematics has been limited but not at a sacrifice of engineering exactness.

• ***Transmission Networks and Wave Filters*, by T. E. Shea (1929); 470 pages.....$6.50**
A specialized book which deals with principles of transmission networks, electric wave filters, and composition of transient waves. It is intended for student engineers or graduate engineers.

• ***Radio Operating Questions and Answers*, by Nilson and Hornung, 400 pages.....$3.25**
This is a technical review book on radio communication for prospective and experienced radio operators of all classes, especially those about to take FCC license examinations. It condenses in question and answer form theory, apparatus, circuits, operation, laws, regulations, etc.—all the information covered in the new form of government examinations. Pocket size, flexible.

• ***Fundamental Electronics and Vacuum Tubes*, by Arthur L. Albert (1938) 422 pages.....$4.50**
The increasing use of vacuum tubes in telephone work makes this non-mathematical book of practical value to persons in engineering and operating branches of telephony. The book discusses the principles of electronics and the theory of vacuum tubes, photocells and copperoxide varistors in telephone circuits and radio. It delves into the theory of these devices and the design and operation of circuits in which they are used.

• ***Communication Engineering*, by W. L. Everitt (1937); 727 pages (second edition).....$5.50**
Book designed for engineers and those with technical training; gives fundamental principles of telephone, telegraph and radio communication without going back to the beginnings of the entire electrical engineering field. Transmission networks and circuits, involving coupled circuits, impedance transformations, equalizers and bridge circuits are treated. Inductive coordination is discussed with the latest theories for minimizing interference. Discussion is given of other links in the circuits which make possible radiotelephony or carrier-current systems, including vacuum tube detectors and amplifiers. Mathematical ideas, beyond calculus, are introduced just before they can be applied.

• ***Inductive Coordination of Electric Power and Communication Circuits*, by Laurence Jay Corbett (1936); 161 pages.....$1.75**
This excellent book discusses the nature of power transmission and of communication transmission, the effect of magnetic and electric induction and various influence factors. Susceptiveness and coupling factors, effects of conductor arrangements, transpositions in power and communication circuits and their coordination, power system wave shape, control of residual voltages and currents and many other phases are discussed. This book should contribute to a fuller understanding by power and communication engineers of each other's problems.

• ***Telephone Theory and Practice*, by Kempster B. Miller (1933); 1414 pages.....$16.50**
A set of three volumes, "Theory and Elements" (1930, 468 pages, $5.50); "Manual Switching and Substation Equipment" (1933, 439 pages, $5.50); and "Automatic Switching and Auxiliary Equipment" (1933, 494 pages, $5.50). Volumes may be purchased separately or as a set. This series replaces "American Telephone Practice" by the same author, published early in the century. The set comprises an excellent source of accurate information of entire subject of telephony.

• ***Elements of Utility Rate Determination*, by J. M. Bryant and R. R. Herrmann (1940); 464 pages.....$5.00**
Based on tested and workable methods, this book discusses factors, methods and problems of evaluating public utility property and service for rate-making. The essentials of valuation, depreciation, expense, return, etc., as factors in establishing proper rates for various utility rates are given. Citations presented from background and key cases decided by commissions and courts.

TELEPHONY PUBLISHING CORP.

608 So. Dearborn St. **Telephone: Wabash 2435** **Chicago 5, Ill.**

THE PLANT MAN'S NOTE BOOK

BY
RAY BLAIN
TECHNICAL
EDITOR

AS THE story is now told, a philanthropist in Hudson, Ohio, back in 1910 wanted to beautify and modernize his home town by installing a water and sewage system to eliminate backyard wells and Chic Sale "mansions." But he insisted that the unsightly telephone poles be abolished and the line placed underground. The village's two little telephone companies balked at the idea.

Weldon C. Wood, a telegraph operator in Cleveland, thought that this was more foolish than most small town feuds. So he went to Hudson and obtained the details from James W. Ellsworth, the waterworks advocate, and others. With his savings and a $25,000 bond issue which he sold to local business men, he merged the Bell and Peoples Telephone companies which were serving only about 100 subscribers.

Thus, Hudson, Ohio, became the first small town in the county to be served by an underground telephone plant.

• • •

It has been said: "The man who waits for things to turn up has his eyes fixed on his toes."

• • •

The time has come when a telephone man will be forced to learn something about radio. Radio and wire communication systems are so closely allied that a qualified communications man must have a knowledge of both.

• • •

An article appearing in the February 1948 issue of "Better Homes and Gardens" entitled: "Do you want to live in the country?" outlines little problems that may stump you if you decide to move beyond the city limits. The house may be nearly perfect, the drainage couldn't be improved, the water supply ample, and the electric line convenient, but other things, the trifles, are important too. The following is quoted from this article:

"To prod our troublesome sore spot, there is the matter of telephone service. If you have never lived in the country, you have not experienced one of life's more refined tortures, the rural line. Our telephone number begins with a zero, which identifies a rural circuit in this vicinity and warns the operator to expect the worst. It continues with a string of digits like a quarterback's chant in football. The complicated number is the simplest thing about a rural line.

"We share the circuit with 11 other subscribers, all fine people and great conversationalists. To help out further, one of the parties on our line is a grocery store which takes orders over the phone. To distinguish between these many subscribers, the operator uses a long and involved series of rings which rend the air like the alarm bell at a fire station, spelling out the location of a blaze in code. The children learned to count by listening for our ring.

"Because the circuit is so crowded, it is almost always busy. When we pick up the instrument to call someone in the city, we usually hear the list of groceries being read by a feminine voice, with slow and elaborate patience. Courteously, we hang up. When we try a few moments later, different voices are on the line: animated voices discussing the local social and financial situation. Next time we try, the same voices are still hard at it, but the time after that — happy day! The line is free. Then there is a long wait for the operator, during which someone else on the circuit picks up the receiver and also begins to wait. We wait tensely, ready to give our number first, while the other party is catching his breath. But it doesn't work. The other party turns out to be a teen-age girl, very alert, who gives her number instantly when the operator appears. We hang up in despair when we hear that voice, for she is a high-school student who works algebra problems over the telephone with her boy friend.

"Now the circuit is tied up solidly for 40 minutes. After that length of time we try again. Grocery list. Finally, just before giving up, we try once more and get the operator without competition. She takes our number, and there is a rapid series of clicks followed by the throbbing, insurmountable busy-signal. The line we are calling is busy, and we have to start all over again.

"So that's one of the trifles. Admittedly, it's a small matter compared to the job of living in the country, but it grows tall when we're trying to call the doctor."

This story is true, we have no doubt, but certainly it is the exception rather than the rule. Rural telephone service has been greatly improved and extended during the past few years. People who contemplate moving beyond the city limits in the future should be able to obtain adequate telephone service in almost any section of this country.

• • •

Last June, Congress established in Washington, D. C., the Joint Senate and House Recording Facility. This activity has increased until now there are three recording studios in the old House office building and two in the Senate office building, operated by a staff of trained engineers who make more than 700 recordings a week.

In this official facility, members of Congress are expected to record only non-political material. The primary purpose of this service is to record the comments of Congressmen on various legislative issues.

Senators and representatives also have recordings prepared for use by home-state radio stations, at political gatherings or at civic, professional or business clubs. They are charged $3.00 each for 15-minute recordings. About 175 members now use the service regularly.

• • •

The Bell System added 2,800,000 telephones during 1947, bringing its total to an all-time high of 28,500,000. Despite this, 1,500,000 people remain on the waiting list for telephone service.

This number is more than twice that of stations on the system a dozen years ago and 12,000,000 more calls are handled each day than in 1947. The New York Telephone Co. recently installed its 4,000,000th telephone; the Michigan Bell its 1,500,000th, and the New England Bell its 2,000,000 telephone.

• • •

The AT&T has filed rates with the Federal Communications Commission covering inter-city program channels with a frequency band extending from 50 to 15,000 cycles. This action is taken

to meet the possible future requirements of FM radio broadcasters.

Program channels currently being used by AM and FM radio broadcasters utilize frequency bands with upper limits ranging from 2,500 to 8,000 cycles.

The monthly rate filed for the new 15,000-cycle band is $10.00 a mile as compared with $6.00 a mile for a 5,000-cycle channel.

A new fractional horsepower motor, which, at rated voltage, has a stalling torque of 75 inch-ounces has recently appeared on the market.

Small enough to fit in the hand, this new motor is of the shaded pole, induction type. With 20-watt input at 115-volt, 60-cycle AC, the no-load speed is 20 RPM on the output shaft.

This motor is constructed of aluminum and has a built-in gear train. A particular feature of the motor is its magnetic clutch. With the de-energizing of the motor, the clutch prevents any over-travel of the output shaft.

This motor is especially suited for use on directional antennas and other communication needs.

PLANT MAN'S QUIZ

Q. Can you give us some advice as to how we can locate and clear a case of low insulation trouble in our cable? We have a 200-pair aerial cable 600 ft. in length. Last fall, this cable developed a slight leak. The trouble does not bring in a permanent signal on a common battery switchboard, but it does cause noise and crosstalk on all pairs. We cannot obtain a reading on a three-volt ohmmeter and neither can we locate the trouble with a bridge.

A. The type of trouble you mention is admittedly the most difficult to locate. However, it is not impossible to find. Often a good location may be obtained with a Wheatstone Bridge and a Varley loop. If you do not have a good conductor in the cable, then string a test wire along the line and connect to the defective pair at the far end of the cable.

From the information furnished in this case, it is doubtful if there is an opening in the sheath. If there were such an opening in the cable last fall, it is believed that the entire cable would be out by this time.

There is a probability that slight moisture was wiped in a splice or that your trouble is in the end terminal. Either of these conditions make testing extremely difficult. If the end terminal is of the protected type, make certain that the protector blocks are not damp and that dust particles have not accumulated on the dialectrics.

If you do have a sheath opening, it must be extremely small and can probably best be located by gas testing. This may be accomplished by placing six to 10 pounds pressure on the cable and then brush soapy water on the lead sheath. Even the smallest sheath opening will be shown by escaping gas blowing bubbles.

Another method that can be used to locate trouble of this nature is the breakdown test. A DC voltage of 150 to 200 volts can be placed on a pair or pairs in an attempt to break down the fault and lower its resistance so that an accurate location can be made by the use of conventional testing instruments. This method is not without its danger, however, for if there is a weak point in the insulation other than at the fault, new trouble may be caused.

If the tone test set and an exploring coil is used to locate a wet spot in a cable, first select a number of pairs having the lowest insulation resistance. Divide these pairs into two equal groups and bunch each group. Then connect the output of the tone generator to the two groups. Some tone generators and exploring coils utilize a special hookup for locating a wet spot in a cable as this type of fault is of relatively high resistance. Another method of locating wet spots is to connect the tone generator from bunched pairs to ground. If one arrangement does not give the required result, it is always best to try the other.

• • •

Q. Is it necessary to use textile insulated cable to connect a large intercommunication telephone system? We have a system of this type to install and have not been able to procure a sufficient amount of this type of cable.

A. There is no reason why paper insulated, lead-covered cable cannot be used for this purpose if it is terminated properly. The paper may be fanned out on the terminal blocks at the set if care is taken to protect the paper insulation with a good insulating paint.

A better plan, however, is to make use of a sealed chamber terminal to terminate the paper insulated cable at each intercommunication station.

Q. Occasionally we encounter subscribers who object to our grounding telephone protectors to water pipes on their premises as they consider this a dangerous practice. Please advise us if it is possible for this method to cause trouble in any manner.

A. The National Bureau of Standards Handbook H-32 entitled: "Safety Rules for the Installation and Maintenance of Electric Supply and Communication Lines" has the following to say on this subject:

"For circuits, equipment, and arrestors at supply stations, connections shall be made to all available active metallic underground water piping systems between which no appreciable difference of potential normally exists, if the pipe is of sufficient capacity, and to one such system if appreciable differences of potential do exist between them. At other places, connections shall be made to at least one such system, if available. Gas piping should be avoided for circuit grounding wherever practicable."

The above report states further that the protective grounding of electrical circuits and equipment to water pipe systems in accordance with these rules should always be permitted since such grounding offers the most effective protection to life and property and is not injurious to the piping systems.

• • •

Q. How is it possible to determine the expected life of dry cell batteries in a telephone exchange?

A. This type of battery, whether on open circuit or on discharge, will deteriorate due to internal losses. The rate of this deterioration varies with the size and type of cell and with temperatures and humidity. In general, the smaller the cell, the shorter will be its shelf life.

Excessive current drains reduce the dry cell life rapidly. The life of the battery is increased by reducing the current drain or providing more time for recuperation. Operating to a low cut-off voltage per cell also increases battery life.

For a battery requiring 4.5 volts, five cells in series will have a cut-off of 0.9 volt per cell as against 1.12 volt for four cells in series and the output will be increased considerably.

When the drain is exceptionally heavy, the use of two sets of cells in parallel will more than double the output. The use of two dry cell batteries alternately in lieu of a single battery continuously will also result in greater energy output per cell.

THE OPERATOR'S CORNER

BY
MAYME WORKMAN
TRAFFIC
EDITOR

A MOST interesting publication coming to the writer's desk is *The Service Assistant's Bulletin*, published by the Southern Bell Telephone & Telegraph Co., Atlanta, Ga. In this issue, "Peg Counts? What and Why" is the featured topic. It is presented in an interesting and understandable manner. I enjoyed the article and I am confident you, too, will find it good reading. It states:

"Called everything from 'counts,' 'peg ac-counts,' and properly 'peg counts,' to unmentionable names, depending upon the knowledge and humor of the traffic people discussing them, peg counts are really very useful and valuable tools in our business.

"They are routine records; weekly, monthly, quarterly, or annual counting of the number and type of calls handled on our local, auxiliary or toll manual switchboards or by our dial equipment. Originally kept by moving pegs on a small board drilled full of holes like a cribbage board, they were called peg counts because of the tool used in making them. The method has changed but the purpose and the name has endured.

"Peg counts are used to determine many of our needs in the operating room, such as the number of operators, hour by hour, the number of switchboard positions required, and the number of trunks between offices and between switchboards in the central office. Outside-the-operating-room needs as well are, in many cases, dependent upon these counts. Many of the company's expenses are prorated to the proper accounts on the basis of peg count units. Estimates of future expense in the traffic department are largely based upon peg counts. Such counts, too, are one of the measurements of the type of job we do.

"Counts of calls are made on meters, some operated manually and others automatically. These figures in terms of calls are then converted into work units by the application of a coefficient.

"By observing thousands of the various types of calls and timing all the involved operations with a stop watch, the coefficient values per call are determined.

"The coefficient comprehends not only answering the line signal, but finding and plugging into the subscriber's or trunk multiple, ringing, passing any necessary order to intermediate operators, encountering a certain number of BY or DA conditions, and disconnecting after conversation. And, it also includes the waiting or idle time necessary if the operator is to be ready—and waiting!—to do a fine service job.

"The coefficient value of calls is affected only by the type and quantity of equipment, seldom or never by the experience or type of operating force. Compensation for inexperience in an operating force is made by other means.

"When the peg count figures by calls are assembled, they are converted to units by the application of coefficients. We have an hourly figure (and a daily total) showing how many work units were produced at the switchboard. By dividing this hourly figure by the number of units it is believed operators of a given experience can handle, we get the number of operators per hour required to do the developed amount of work. By further and somewhat similar calculation we can determine how many switchboard positions are necessary."

On the back cover of *The Service Assistant's Bulletin*, we found this clever verse:

SERVICE ASSISTANT

S tudies with operators clearly show
E very help we give keeps them in the 'know'
R esourcefulness in emergency, teamwork and too
V ery important is tact, we know it is true.
I ntelligence is needed from the start
C onfidence and courtesy from the heart—
E ach of us plays a very large part.

A nd if we remember always to be kind,
S incere in our dealings, we usually find
S hows good results in the customer's mind.
I n keeping our girls happy and at ease,
S ervice is given that will truly please.
T hought and consideration for faults we see
A re better understood when combined with 'we'
N ow you know what the operators want
T o stand idly by? No, no, please don't.

—Mrs. Juanita O. McCall
Macon Local Traffic

Traffic Questions

(1) What phrase is used in passing an order to clear a circuit?

(2) What phrase is used when passing an order to hold a circuit?

(3) Should the names of intermediate offices at which NC is encountered be enclosed in parentheses?

(4) When a call order has been left at more than one intermediate office and a report of "Ready" is received, should a line be drawn through the entry corresponding to the office reporting "Ready?"

(5) Has the title "Service Assistant" replaced the title "Supervisor?"

Answers to traffic questions appear on page 36.

V V

Pennsylvania Telephone Corp. Issues 50th Anniversary Book

An enlightened interpretation of the American competitive business system is included in "The Flight of Speech," 50th anniversary publication of the Pennsylvania Telephone Corp., Erie, Pa. This company is one of the largest and oldest Independent telephone companies in the country.

The story which it presents is far more than the chronology of an individual business enterprise. It is a factual account of an American popular protest against monopoly and of the results which this revolt achieved in terms of better and cheaper telephone service.

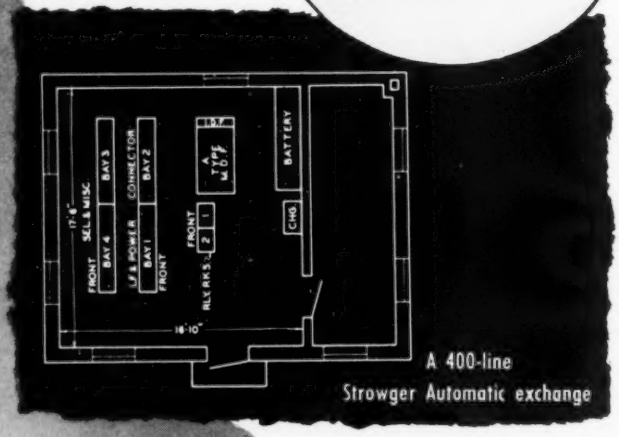
"The Flight of Speech" gives the history and background of the Independent telephone industry and interprets it in terms of one of the most successful exponents of the independent concept. Fascinating highlights in the early competitive struggle between the Bell System and the Independents (now happily a thing of the past) enliven the story. And the book makes clear, in no uncertain terms, just how difficult and complex is the present-day problem of maintaining our nationwide telephone system.

The book, which was written and produced by William E. Rudge's Sons, New York City, is an attractive volume of more than 100 pages, well illustrated with pictures, graphs, and organizational charts. It is a volume which should find a place in many business libraries and which may well become a text book for those who wish to undertake a study of the origins of American business.

Strowger Equipment

Requires *Less* of today's

High-Cost co

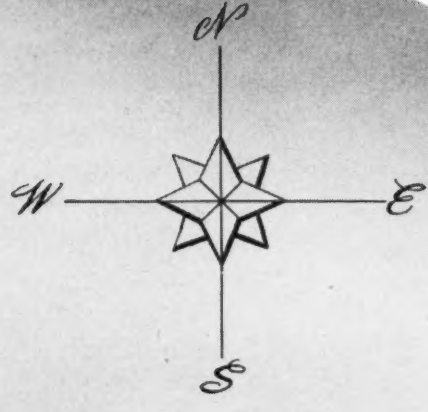


A 400-line
Strowger Automatic exchange

The average cost of new construction in the U
States was 104 percent higher at the close of
than it was in 1941, according to figures supplie
the Associated General Contractors of America
some states the average increase in building
ran as high as 109 percent.

Consider what this means to you in terms of
requirements for new equipment. Obviously,
cubage than you need is an unnecessary exp
When you plan new construction, plan it a
space-saving Strowger Automatic equipment. Lin
line and link for link, Strowger Automatic equip
not only out-performs any other equipment avai
offering comparable facilities—it requires less
in which to do it!

You save cubage when you plan your new bui
around Strowger equipment. In other words, you
on building costs, and that makes sense in any
language.



AUTOMATIC ELECTRI

*Originators and Developers of the Strowger Step-by-Step "Director" for
Sender-Translator Operation . . . Machine Switching Automatic Dial*

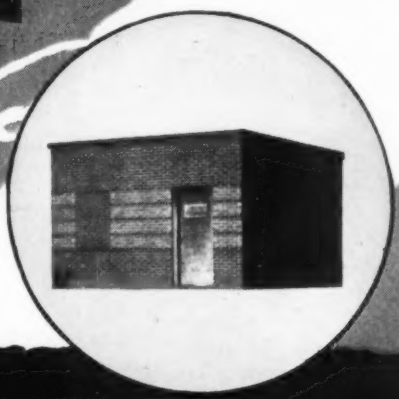
Makers of Telephone, Signaling and Communication Apparatus . . . Electrical Engineers, Designers a

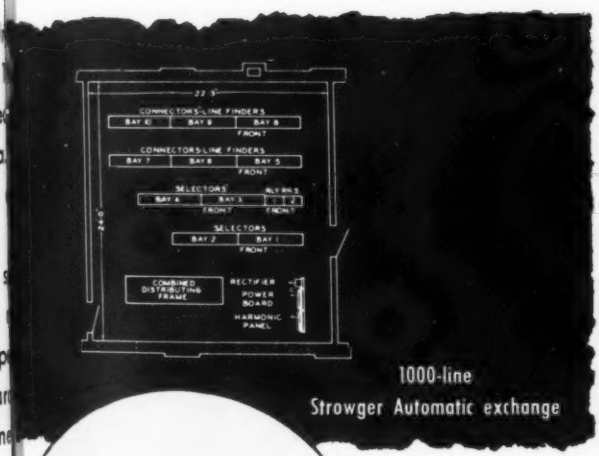
Distributors in U. S. and Possessions

AUTOMATIC ELECTRIC SALES CORPORATION, 1033 W. Van Buren St., Chicago
Export Distributors: INTERNATIONAL AUTOMATIC ELECTRIC CORPO

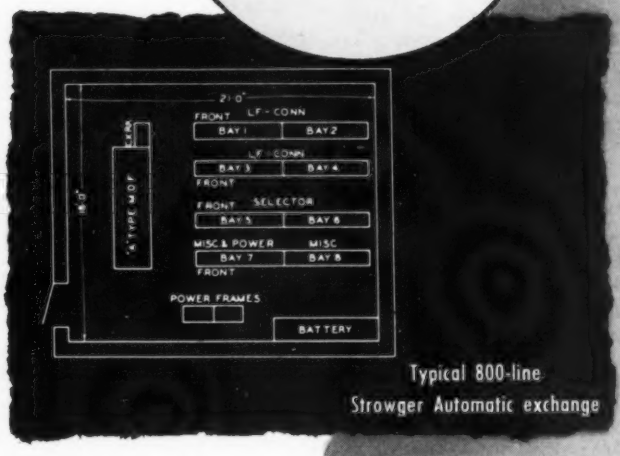
This typical modern Strowger Automatic exchange makes most efficient use of space — yet all equipment is readily accessible.

...construction

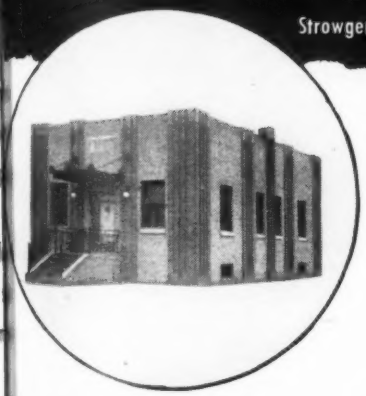




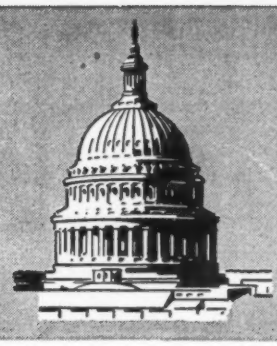
1000-line
Strowger Automatic exchange



Typical 800-line
Strowger Automatic exchange



COURTS and COMMISSIONS



Illinois Bell Asks Higher Rates in Indiana Exchanges

A petition, filed with the Indiana Public Service Commission on Mar. 25 by the Illinois Bell Telephone Co., requested increased rates in the two northern Indiana counties in which the company operates.

The Illinois Bell serves about 75,000 telephones in Lake and Porter Counties, including Hammond, Gary, East Chicago, Whiting, Cedar Lake, Dyer, Highland, Griffith, Munster, Lowell and St. John.

No specific increases were sought in the petition, pending an investigation by the commission.

Rate increases were granted by the commission last year for other parts of the state served by the Indiana Bell Telephone Co. The last general increase in Illinois Bell rates in its Indiana area was in 1921, and in 1940 rates were lowered for many of its customers in that state. Increased rates granted the Indiana Bell Telephone Co. last August did not affect telephone customers served by the exchanges of the Illinois Bell.

At first city officials of Gary expressed doubt whether Illinois Bell is legally entitled to petition the Indiana commission for permission to increase rates under terms of a 50-year franchise made with the municipality in 1907, which fixed telephone rates and provided that rate changing proposals be taken up with the local city government. However, it is reported that the Gary authorities had agreed to leave the matter to the commission for determination.

V V

May Scale Down Canadian Bell Capital Increase

Despite opposition from individual progressive Conservative members, there has been and will be no concerted attack or filibuster on the bill now before Parliament to increase capitalization of the Bell Telephone Co. of Canada.

It is expected that the bill will be attacked on two grounds when it gets into committee: (1) That some undertaking should be included as regards rate increases; (2) that there be some scaling down of the present proposal for capital increase.

The company's present capital authorization is for $150 millions. The new measure would boost this to $350 millions. Some contend that such an increase might put the company in a position where it would not have to return to Parliament for many years for any further authorization or for any review of its operations.

V V

Approves Rates for Optional Common Battery Service

Approval of rates for optional common battery service at the Loxley exchange of the Gulf Service Co., Foley, was given by the Alabama Public Service Commission Mar. 8. Magneto service is also rendered at Loxley.

Following are the common battery rates approved by the commission:

Urban Service (Within Base Rate Area)

Business, one-party	$4.25
Business, two-party	3.50
Residence, one-party	2.75
Residence, two-party	2.50
Residence, four-party	2.25

Rural Service

Rural multi-party, residence	$2.25
Rural multi-party, business	3.25

The above rural service rates apply for the first four miles, airline measurement, beyond base rate area boundary. There is an additional charge of $1.00 for each additional four miles that line is extended beyond base rate area boundary.

V V

Georgia Court Allows Bell Additional Revenue

An order allowing the Southern Bell Telephone & Telegraph Co. an annual increase of $360,765 on its operations in Georgia above the rate increase fixed by the Georgia Public Service Commission in January was issued Mar. 26 by a special three-judge Fulton County Superior Court.

The company originally petitioned the commission for a rate increase of $3,715,000, of which the commission granted only $1,412,000. The company then filed suit asking permission to put its own rates into effect without interference from the commission.

The temporary court order handed down Mar. 26 was by a 2-to-1 vote of the judges. In dissenting, Judge Walter C. Hendrix declared that "the case is now ripe for final trial and disposition. We are asked to temporarily enjoin the public service commission from interfering with the company's collecting more revenue than the commission authorized. I find myself unable to agree that a sufficient showing has been made by the company to justify, temporarily, enjoining the public service commission on the sole ground that the company's property is being confiscated."

Chairman Walter McDonald of the Georgia commission hailed the temporary court order as a "great victory" supporting the commission's judgment. He indicated, however, he personally favored an appeal to the Georgia Supreme Court on the principle of whether the three judges had a right "to do what amounts to prescribing rates."

Mr. McDonald pointed out that the court increase, if finally sustained, would amount to only eight cents a month per telephone in Georgia. He said the commission, however, would decide how the $360,765 increase is to be apportioned.

In the prevailing order of the court, Judges Frank A. Hooper and Bond Almand directed that the company file a schedule within 10 days of the proposed telephone and toll rates which it would put in effect in order to raise the additional revenue of $360,765. The two judges also directed that the company post a $400,000 bond for the purpose of repaying subscribers in the event the company eventually loses its fight for higher rates.

The temporary court order was on a request by the telephone company to place higher rates into effect pending the outcome of a full court review of disputed facts between the company and the public service commission.

Sues New England T&T For Telephone Removal

Judge Frank J. Donahue issued two temporary restraining orders Mar. 24 in Suffolk Superior Court, Boston, enjoining the New England Telephone & Telegraph Co. from transferring or disposing of the call numbers on two public telephones which the company had removed from two East Boston pool rooms after the police had complained that the telephones were being used for illegal purposes.

The restraining orders were issued at the request of Carmen Picardi and John Giglio, owners of the pool rooms, until Mar. 20. Both have filed bills against the telephone company, seeking damages.

They informed the court the telephones in question were removed by the telephone company on Mar. 17 after they were told the police had requested it. Both stated that to their knowledge the telephones were never used for any illegal purpose.

V V

United Receives Rate Increases in Missouri

Missouri's Public Service Commission on Mar. 26 granted permission to the United Telephone Co., Kansas City, Mo., to increase rates in its 56 Missouri exchanges.

The authorized increases are designed to bring the company $74,000 in additional annual revenue.

No recommendation as to service was made in the commission order, although at the January hearing on the proposed new rate schedules protests of poor service were filed by subscribers at Fairfax, Clinton and Salem.

The 56 exchanges in north Missouri serve 27,736 subscribers. The new rates were authorized to go into effect Apr. 1.

V V

Virginia T&T Petitions For Higher Rates

The Virginia Telephone & Telegraph Co., Charlottesville, operating exchanges serving 23 communities in Virginia, petitioned the Virginia Corporation Commission Mar. 9 for an increase in rates. The commission set a hearing for Apr. 27.

The company has asked for higher rates which would result in an increase in revenues totaling 13.6 per cent and amounting to $132,481 per year.

V V

Approves Petition

The Michigan Public Service Commission on Mar. 24 approved the Lacey (Mich.) Mutual Telephone Co.'s petition requesting increased rates in the Lacey exchange area and a proposed rural line extension policy, rates and regulations, for foreign exchange service.

V V

Bell Gets Part of Requested Increase in Rhode Island

Rhode Island Public Utilities Administrator Thomas A. Kennelly authorized Mar. 31 a 10.25 per cent rate increase for the New England Telephone & Telegraph Co. instead of the 23 per cent increase sought by the company (TELEPHONY, Jan. 17, p. 32).

Additional annual revenues of $2,700,000 were requested. Only $1,200,000 was granted.

It was not immediately indicated whether the company would appeal the administrator's findings.

Mr. Kennelly held that the rate of return on the company's investment, which the company had claimed is now nil, should be 5.6 per cent instead of the proposed 5.857 per cent.

Extended area service, by which the company sought to merge the Bayview, Centredale, Greenwood, Pawtucket, Scituate, Valley and Warren exchanges into the same local service area as the 11 exchanges in Greater Providence, is now permitted.

The company's request to drop a 33⅓ per cent discount to municipalities was granted on the ground that an opinion of the state attorney general advised that the administrator lacked authority to order continuance of such discounts.

A petition of the Hospital Association of Rhode Island for a discount for hospitals was denied. Mr. Kennelly said legal advice was that initiation of special rates and discounts lies with the company, subject only to approval or disapproval by him.

V V

Rules Against Use of Unofficial Directory Binders

The North Carolina Utilities Commission in an order issued Mar. 31 declared that anyone putting their own binders on telephone directories will be subject to loss of telephone service.

The ruling was issued after the North State Telephone Co., serving High Point and Thomasville, complained that some subscribers are encasing directories in binders advertising their own concerns. The company pointed out that businesses buying advertising space on the covers of the telephone directories are not getting their money's worth if the unofficial binders are added.

The commission agreed with this contention.

Appeals Nebraska Closed Shop Ban to U. S. Supreme Court

Permission to appeal to the federal supreme court was recently granted to the American Federation of Labor by the Nebraska supreme court. The labor organization is questioning the validity of a recent Nebraska decision upholding the state's constitutional amendment banning the closed shop as a reasonable and legal exercise of state police power.

As the state court opinion was unanimous, the AFL waived its right to ask for a rehearing. It plans to speed its appeal to Washington, D. C. in the hope of submitting it before the summer vacation of the federal court.

Labor attorneys, in requesting appeal permission, challenged the soundness of the state court ruling that the amendment does not violate any provision of the federal Constitution or the National Labor Relations Act. They asserted that "such absolute and unconditional proscriptions against entering into union-security agreements as are contained in the amendment are arbitrary, unreasonable, excessive and without rational basis."

V V

Dismisses Oklahoma Boundary Fixing Application

Hearing on the application of B. Richardson, Oklahoma Corporation Commission telephone engineer for the fixing of boundaries for the new Midwest City exchange of the Southwestern Bell Telephone Co., has been dismissed (TELEPHONY, Feb. 7, p. 26).

Since the application was filed, negotiations have practically been completed by Southwestern Bell for the purchase of the Nicoma Park Telephone Co. exchange from J. B. Bohlen.

Purpose of the original application was to fix the boundary between the Nicoma Park and Midwest City exchange.

V V

Allowed 25c Increase on All Service Classifications

The Oakdale (Neb.) Telephone Co. has been granted permission by the Nebraska State Railway Commission to increase net rates 25 cents a month on all classes of service.

Beginning Apr. 1 the following schedule became effective: Business and individual business, $1.75, party residence and rural party, $1.25.

Company revenues for 1947 were $4,459.85 and toll revenues $1,274. The company serves 34 business, 108 residences and 201 farm homes. A petition was presented signed by 182 subscribers agreeing to the increases.

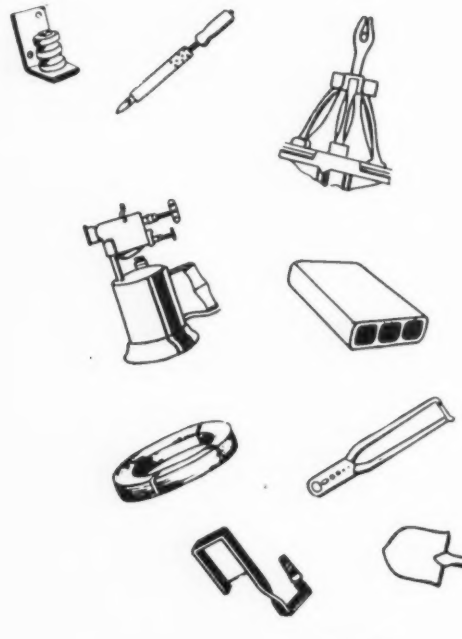
(Please turn to page 28)

How Late Will YOU Work tonight?

Here's a man in a muddle:

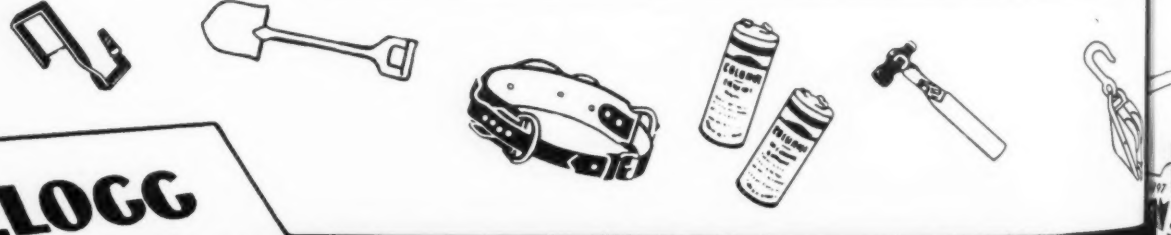
He needs fifty line-supply items — and he's trying to deal with almost as many individual companies. He MAY get home by eight tonight — but the job is *never* done!

Everything in Line Supplies at Your Finger-tips!



3 Simple Steps!

- **YOU FILL OUT JUST ONE FORM** for ALL your line supplies. Saves you time and work!
- **YOUR ORDER GETS PROMPT ATTENTION** from experienced telephone men. No chance for slip-ups here!
- **YOUR ORDER IS SHIPPED QUICKLY** from the distribution point nearest you. Fast, sure service!



KELLOGG Line Supplies

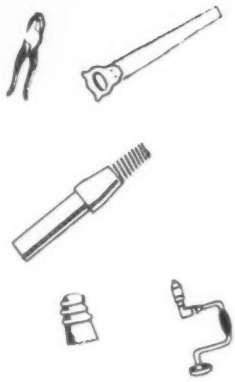
KELLOGG SWITCHBOARD & SUPPLY CO.
6650 S. Cicero Avenue, Chicago 38, Illinois

So he decides to clean house...

Someone tipped him off that he could order all fifty items from the same company! No need now for all those order forms, letters and time-wasting check-ups!

Now he's eating at home, again!

One short, quick order to KELLOGG and the job is done! And he knows everything will be taken care of *right* — because Kellogg GUARANTEES SATISFACTION!



Take your cue from this story with the happy ending and order your line supplies the simple, easy, time-saving way! One order form is all you need, for Kellogg stocks everything in line supplies—down to the last nut and bolt. And every item is of the finest quality obtainable!

You get your material faster, too! Kellogg's more than 100 distribution points all over the country allow quick shipment from the point nearest you. That saves you time and shipping costs.

You know your order will be handled RIGHT at Kellogg, because from the moment it arrives, it's handled only by experienced telephone men. They understand your problems, and see to it that you get the materials that best suit your needs.

High quality in every item is assured, because every item is "DOUBLE-GUARANTEED." That means its quality is guaranteed both by Kellogg and by responsible manufacturers. And that same quality is what helps you hold down maintenance expenses.

For time-savings in ordering, faster shipments, and better quality materials—send your next order to Kellogg.

The commission estimates annual revenues will be increased to $7,058.10 and expenses to $4,883.34, leaving a net before taxes of $2,174.76. With taxes included the net income is estimated at $1,486. The company is capitalized at $20,000 and has 107 shareholders.

V V

Detroit Proposes Dismissal of Mich. Bell Rate Petition

The Michigan Public Service Commission has taken under advisement a motion of the City of Detroit that the Michigan Bell Telephone Co. petition for a $10,400,000 rate increase be dismissed.

The dismissal motion was presented by James H. Lee, assistant corporation counsel of Detroit, and supported by the Michigan Hotel Association.

Mr. Lee said the commission should stop the increase case until a decision is reached on a $3,500,000 rate-reduction order now pending in Ingham County Circuit Court.

The order, effective Jan. 1, 1946, was suspended by an appeal to the court taken by the company. The case was heard by the late Judge Paul G. Eger, who died last August before handing down an opinion. The case has never been resumed.

"It is hard for the commission to see," said Commission Chairman Stuart B. White to Lee, "why you sat idly by when this case (the increase) was started last summer and let it go this far without moving for dismissal until now."

When the commission took the motion under advisement, Mr. Lee said that his cross-examination of company witnesses would have to be deferred until the reduction case was decided.

Chairman White said that if the Detroit counselor asked for such a deferment, his request would be denied.

V V

Authorized to Operate Beach Service Through Exchange

The Florida Railroad & Public Utilities Commission on Mar. 30 authorized the Peninsular Telephone Co., Tampa, to operate its Indian Rocks Beach service through the Clearwater exchange.

Rates for the service will be $7.60 a month for an individual business line and $5.10 for an individual residence line. Party line rates will be substantially lower.

Service in the Indian Rocks Beach area previously has been conducted on a toll basis.

Overrules Bell, Commission Motions in Kansas Rate Case

Motion for a stay on a Kansas Corporation Commission order dismissing a Southwestern Bell Telephone Co. rate increase application has been denied by Topeka District Court Judge Paul Heinz. A stay would have enabled the company to put higher rates into effect immediately (TELEPHONY, Mar. 13, p. 36).

Also overruled was the commission's demurrer and motion to dismiss the stay request.

In letters to attorneys for both sides, Judge Heinz held the court is without jurisdiction to grant such a request.

Southwestern Bell, in separate action, had asked a stay and a review of the entire case after the commission had dismissed its original application and had declined to grant a rehearing.

V V

Postpone Ohio Rate Hearing

Hearing on the Ashland Home Telephone Co.'s application for a rate increase has been deferred by order of the Ohio Public Service Commission. Ashland and other cities involved requested postponement.

The commission will set a resumption date later.

V V

Summary of Commission Rulings and Hearings

Illinois Commerce Commission

Apr. 6: Hearing on application of Equality (Ill.) Telephone Co. for permission to operate a telephone system and for authority to issue $4,900 of its common stock.

Apr. 6: Hearings on applications of Woodlawn (Ill.) Telephone Co. and the Jo Daviess County Mutual Telephone Co., Massbach, for increased rates.

Apr. 7: Hearing on application of Rossville (Ill.) Telephone Co. for increased rates.

Kansas Corporation Commission

Apr. 12: Hearings on the following rate applications: Potwin (Kan.) Mutual Telephone Co.; Galen D. Force at Circleville; the Katy Telephone Co., Elsmore; the Home (Kan.) City Telephone Co.; and the Kanorado (Kan.) Telephone Co.

Apr. 12: Hearings on rate applications of the Esbon (Kan.) Telephone Co., the Acme (Kan.) Mutual Telephone Ass'n., and of the Dorrance (Kan.) Telephone Co.

Apr. 19: Hearings on application of Rock (Kan.) Rural Telephone Co., and the Delavan (Kan.) Mutual Telephone Co. for authority to change rates.

New York Public Service Commission

Apr. 5: Hearing on accounts and records of Central Chautauqua Telephone Co., Sinclairville.

Oklahoma Corporation Commission

Apr. 13, 18, 20, 21, 27, 30 and May 7, 14, 18 and 28: Continued hearings on application of Southwestern Bell Telephone Co. for increased intrastate rates in its 146 exchanges.

Apr. 21: Hearing on application of Lenapah (Okla.) Telephone Co. for increased rates.

Apr. 21: Hearing on application of Elmer Telephone Co. for increased rates.

Apr. 21: Hearings on applications of Panola, Arpelar, and Savanna residents to have certain areas declared open territory. Panola residents request service from Wilburton.

Apr. 28: Hearing on application of H. C. Popjoy et al for service from the Southwestern Bell Telephone Co. in an area northeast of Britton now claimed by the Spencer (Okla.) Telephone Co.

June 16: Continued hearings on applications of Southwestern Bell Telephone Co., Southwestern Associated Telephone Co., Lubbock, Tex., Southwestern States Telephone Co. of Brownwood, Tex., and Oklahoma Telephone Co., Broken Arrow, for continuance of rules, similar to those of expired federal regulation U-2 governing order of service installation.

June 22: Continued hearing on application of residents of Moore, requesting that the Southwestern States Telephone Co. of Brownwood, Tex., be required to give adequate service.

Sept. 7: Hearing on application of Wayne residents for automatic dial exchange installation by the Southwestern States Telephone Co., Brownwood, Tex.

Pennsylvania Public Utility Commission

Mar. 30: Hearing on complaint of Pennsylvania Hotels Ass'n. and Penn-Harris Hotel Co. against the Bell Telephone Co. of Pennsylvania, alleging Bell's failure to state division of hotels' message rate and its institution of unauthorized changes in tariff regulations.

Apr. 1: Investigation by commission of rates, charges, and service of the Bell Telephone Co. of Pennsylvania in exchange areas of the Pittsburgh district.

Wisconsin Public Service Commission

Apr. 8: Hearings on applications of Commonwealth Telephone Co., Madison, and Elk Creek (Wis.) Telephone Co. for increased rates.

Apr. 9: Hearings on applications of Osceola (Wis.) Farmers Mutual Telephone Co. and Lewis (Wis.) Telephone Co. for increased rates.

V V

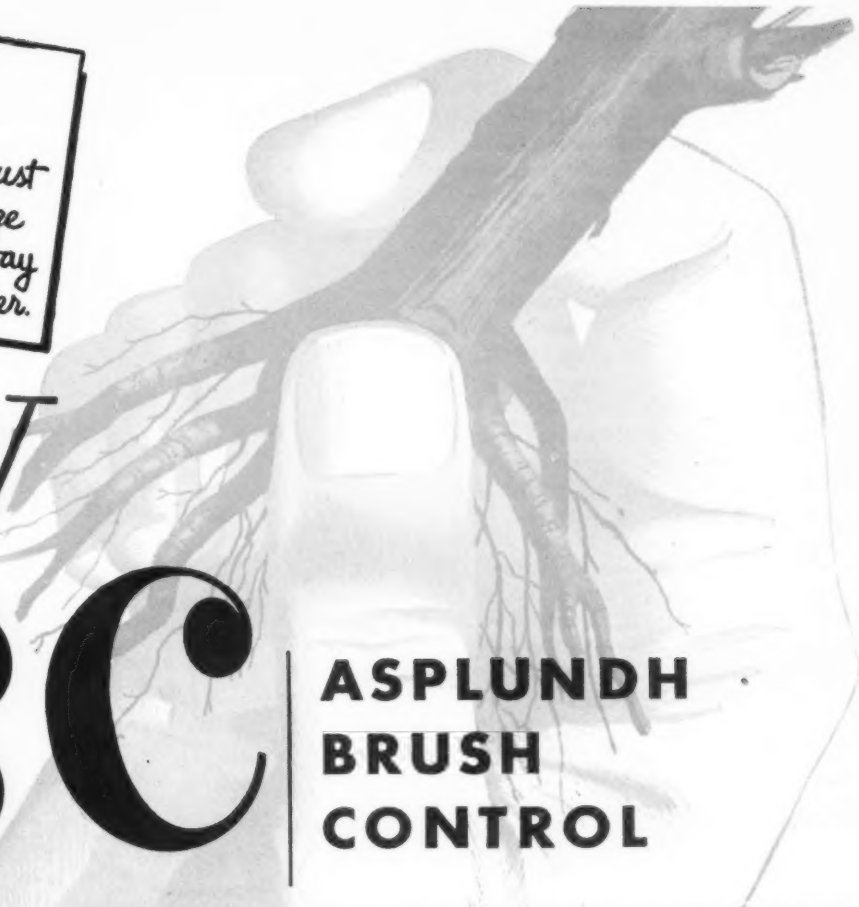
Walter Named Sales Executive of Raytheon

Charles F. Adams, Jr., president, Raytheon Mfg. Co., Waltham, Mass., has announced the appointment of W. Hamilton Walter to the newly created position of coordinator of sales for the corporation. He will supervise Raytheon's marketing, advertising and public relations programs and will be a member of the president's advisory staff.

Mr. Walter, a native of Chicago, Ill., was formerly vice president for North Electric Mfg. Co., Galion, Ohio, and previously had been associated with the Automatic Electric Co., Chicago.

REMINDER:

The spraying season is just about here. Better arrange now to have your right-of-way treated with "ABC" this summer.



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ADAPTABLE. ABC can be used wherever a man can walk.

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"ECONOMICAL LINE CLEARING EXCLUSIVELY"

General Chief Engineers Meet in Chicago

The Chief Engineers' Committee of the General Telephone System met in Chicago at the Bismarck Hotel recently for a four-day conference. Consisting of Dean M. Barnes, chief engineer of Associated Telephone Co., Ltd., as chairman and C. E. Jones, H. E. Hussey and W. O. Trettin, the latter three chief engineers representing the Eastern, East-Central and Central Groups respectively, the committee was formed in July, 1944, at the suggestion of Harold V. Bozell, President, General Telephone Corp. and General Telephone Service Corp. Its purpose is the formulation of system recommendations relating to plant and engineering matters and for the interchange of views and information between General Telephone System operating companies. Executive offices of the Associated Telephone Co., Ltd., Eastern, East-Central and Central Groups are in Santa Monica, Calif., Erie, Penn., Lafayette, Ind.; and Madison, Wis., respectively.

Mr. F. E. Norris, vice president, General Telephone Service Corp., attended all sessions of the recent conference as did Mr. C. C. Whitlock, general plant superintendent of Indiana Associated Telephone Corp. Mr. Thomas A. Boyd, vice president, General Telephone Corp. and General Telephone Service Corp., Mr. Walter Dakin, Central group manager, Mr. L. F. Shepherd, East-Central group manager, and Mr. H. M. Strosnider, general equipment superintendent for the Southwestern Associated Telephone Co., also took part in some of the discussions.

Representatives of several manufacturers met with the committee to discuss problems relating to standards, specifications, and shipping schedules.

The chief engineers have not met at regular intervals in the past, but it is expected that conferences will be held in the future about 9-month intervals. The next conference is tentatively scheduled for December of this year or January, 1949.

V V

Elevator Telephones Used In Fire Safety Program

A dial telephone has been installed in each of the elevators of the Ritz Hotel, Atlanta, Ga., as part of a fire safety program developed by the management.

The telephone is located on the elevator sidewall at a point near the operator's shoulder, and is connected into the hotel telephone system by a sliding trolley arrangement which gives good connections.

Under the plan utilized, the elevator operator checks every floor in the hotel once per hour at a pre-set time, using a watchman's punch clock at stations at the end of each hall to prove that he has made the inspection. The watchman's clock is also kept in the elevator. The operator looks at all cigarette receptacles, in all empty rooms, and into every corner of janitor's closets, lavatories, etc. At the end of each inspection, in addition to recording the trip on his clock, he telephones the results down to the manager's office.

The telephone installation has also proven valuable in saving time with guest service, according to the Ritz management. A pointer in the lobby indicates the floor on which the elevator is stopped. If a guest on any floor wants service, the desk clerk rings the telephone in the elevator, which calls the operator far more rapidly than any other method.

"Oh, you needn't deliver it—I'll just roll it there!"

V V

Mobile Telephone Regulations Announced in New Jersey

Looking ahead to the "not far distant day" when physicians, newspaper reporters, photographers, salesmen and other businessmen will be hustling over Newark, N. J. streets in telephone-equipped automobiles, Public Safety Director George Keenan recently prepared a traffic regulation to keep the situation in hand.

"No operator of a motor vehicle equipped with radio-telephone service shall receive or transmit messages over such a radio-telephone while his vehicle is in motion.

"When an operator is receiving or transmitting such messages, he shall stop the vehicle in such a position as not to interfere with the orderly movement of traffic."

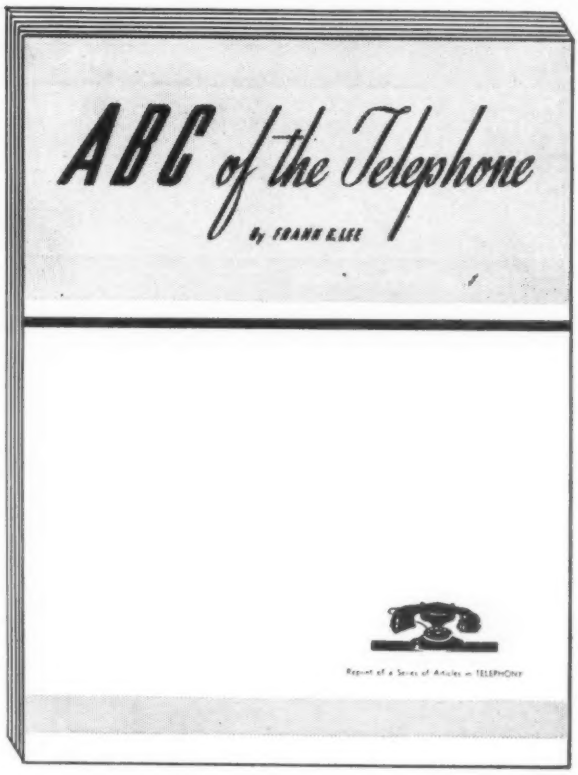
Mr. Keenan said the regulation does not apply to the use of the telephone by occupants other than the driver, pointing out that it does not apply to police radio cars which always have a detail of two men.

V V

Newman Appointed Manager

J. L. Newman has been appointed by the Nebraska Continental Telephone Co., Columbus, as manager of its newly created district including eleven exchanges in southwestern Nebraska and one in Kansas. Mr. Newman began his telephone career in 1910 with the Farmers & Merchants Telephone Co.

REPRINT OF "ABC OF THE TELEPHONE" AVAILABLE



A booklet of 84 pages containing the first 21 installments of Frank E. Lee's popular article on "ABC of the Telephone," which have appeared in past issues of TELEPHONY now is available to the telephone industry.

The first 21 installments covered the following subjects: Electrical circuits, transmitters, receivers, induction coils, generators, ringers, relays, line protection, dials, automatic switching, principles of protection, drop wire installation.

Mr. Lee has resumed his articles in TELEPHONY, discussing many other important phases of telephone plant work. Future articles will cover: (1) Installation of instrument wire and station apparatus; (2) general circuit layout; (3) line maintenance; (4) fault locating (to include maintenance correction methods); (5) cross-talk elimination; (6) cable construction and transmission developments.

The first 21 installments and future articles are designed for the beginner and operating telephone companies will want to order the reprint of the early installments and subscribe to TELEPHONY so that their plant men will be able to maintain a complete file of Mr. Lee's series. To date more than 2,000 copies of these reprints have been distributed and the demand for them continues from both large and small telephone companies.

USE THESE COUPONS TO ORDER REPRINTS AND SUBSCRIPTIONS

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Please send _____ copies of the 84-page booklet—"ABC of the Telephone," by Frank E. Lee, at the following prices: Single copy, $1.50 each; 2 to 25 copies, $1.35 each; 26 to 50 copies, $1.20 each; more than 50 copies, $1.05 each.

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NEW DIAL EXCHANGE OPENED IN LONDON

ON SEPT. 13, 1947, the new Monarch director exchange was cut into service in the London, England automatic telephone area. This event, which before the war would have attracted little attention in a city whose automatization plans were proceeding so rapidly that no fewer than 100 exchanges of the director type had been brought into service between the years 1927 to 1937, today has a special significance because the occasion marks the re-entry into the field of telecommunications of the Wood Street Building which in 1939 housed three automatic exchanges with a capacity of 16,500 subscribers' lines and 7,000 junctions.

The story of this building during the war was typical of many automatic exchanges in Great Britain and its reopening justifies an outline of its history and a description of the equipment insofar as this is representative of the trend of British Post Office policy for future installations.

The Wood Street Building was completed in 1929 and lies in close proximity to St. Paul's Cathedral. At the opening date the structure housed two automatic exchanges, Metropolitan and National; a third exchange, London Wall, being due for completion at a later date. The building was one of the largest of its type in the British Empire, comprising six floors and a basement and was equipped throughout with apparatus of the Strowger channel type incorporating the director system; and the test room, occupying the whole of the first floor, was the largest in the British Isles.

The exchanges continued to function until Sunday, Dec. 29, 1940, a date which will long be remembered for it was on this night that the Luftwaffe struck its most devastating blow at the heart of London and transformed the city into an inferno of flame. Fifteen hundred fires were raging simultaneously, six developing into major conflagrations, the largest of which covered an area of half a square mile in the vicinity of St. Paul's. The exchange building was quickly surrounded by numerous outbreaks but the staff continued working and was able to deal with the showers of incendiary bombs which rained down from hundreds of German aircraft whose main object it was to destroy the city by fire.

At 7 p.m., a high explosive bomb fell in the roadway outside the building. The blast blew in all the windows, frames and doors, and worst of all, caused burning embers and debris of every description from adjacent buildings to swirl in through the openings and start numerous fires all over the structure. At the same time the water supply failed due to the numerous demands made upon every hydrant in the area.

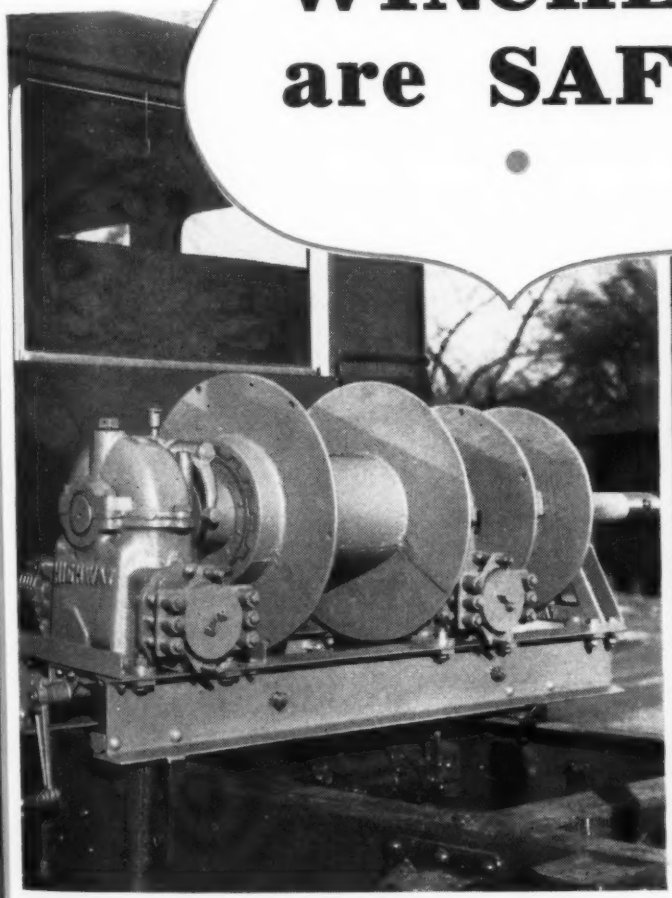
The order was, therefore, given for the staff to evacuate the building but four engineers and three firemen remained until after midnight endeavoring to put out the flames. By this time the atmosphere was so hot that further efforts were impossible and they were obliged to leave through the only possible exit—the cable tunnel. The fire continued unchecked the whole of the next day and it was not until the following Tuesday that a survey could be made of the damage, when it was found that the only equipment to escape destruction was the power plant.

Despite the continuation of the raids and the difficulties imposed by the blackout, continuous day and night work was carried out by gangs of workmen brought in from all over the country in an endeavor to restore the service and they worked miracles of organization and improvization at short notice. The structure of the building was sound, but the equipment was

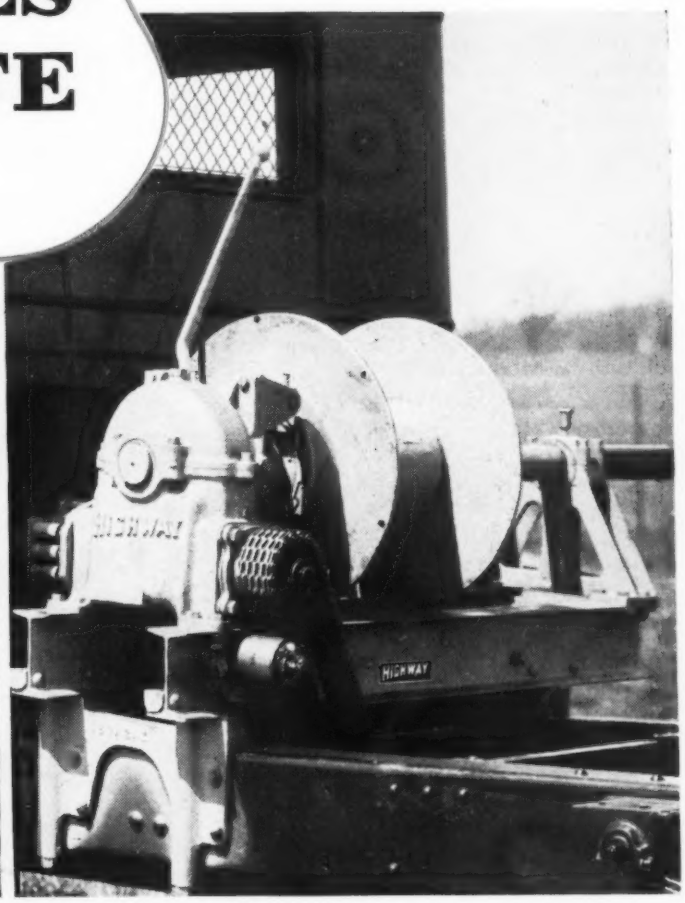
Wood Street exchange building as it stands today.

Switchboard room of Wood Street Building following bombing by Germans in 1940.

HIGHWAY WINCHES are SAFE



HIGHWAY MODEL L-16C-6 Double Drum Winch is a dual-purpose unit. 16" drum has spline type clutch. 6" drum is fixed type.



HIGHWAY MODEL L-22C Winch is a small compact unit specially designed for use on 1½ and 2-ton truck chassis.

Perhaps the biggest single recommendation for rugged Highway Winches is the extra measure of *personal safety* which has been engineered into them. They are powerful, certainly. They are dependable, naturally. But men who use Highway Winches have utmost confidence in them because their response is immediate. They pull when you want them to pull. They stop when you want them to stop. They're *safe* for operators.

You'll get the same smooth operation and uncompromising integrity, whether you choose the Highway Double Drum Model L-16C-6 or the small compact Highway L-22C. Both are built to Highway's famous high quality standards. Each delivers superlative performance within the range of loads for which it is designed.

Other famous Highway equipment includes line construction and maintenance bodies, earth boring machines, pole trailers, cable reel trailers and splicer's trailers, all designed for maximum convenience, efficiency, and service. Write us today about your own special requirements.

HIGHWAY TRAILER COMPANY

Manufacturers of: Utility Bodies • Winches • Earth Boring Machines • Pole and Cable Reel Trailers and other Public Utility Equipment.

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entirely destroyed and 500 tons of scrap metal were removed by army helpers by the simple expedient of hurling it through the gaping walls. Of the 16,000 lines in service before the fire 5,000 were no longer required as the premises they served were destroyed or damaged.

Within 10 days complete service had been restored to government offices and important subscribers, the public being catered for with 100 telephone booths opened in the vicinity of the building and by the opening of a manual exchange which had previously been closed. By the end of March, 1941 the amount of work accomplished included the laying of seven miles of new street cable, 250,000 pairs of wires jointed in cables and the fitting of 300 miles of jumper wire.

With the termination of hostilities labor and materials could be diverted to the reconstruction of the interior of the building and to re-equiping it with selecting apparatus, the original disposition of the plant being to a great extent retained.

Monarch is a "2000" type director exchange the type number being derived from the designation of the Type 32A (British Post Office Type 2000) two-motion selector standardized by the British Post Office. The equipment conforms in all details to BPO standard practice for exchanges of this type. Power supply is on the well-known "divided battery float" scheme and the batteries and generators provide the power by busbar distribution not only for "Monarch" but also to the other exchanges in the building. Fault alarm indicators, ventilation and lighting arrangements are in accordance with normal modern practice.

In view of the experience gained during the war, particular attention has been given to protection against fire risk particularly with respect to stairways and cable ducts which pass from floor to floor. Stairways are built at the extreme ends of the building between the outer wall and an inner wall separating them from the floors they serve; access to the exchanges being obtained through fireproof doors. Where exchange cabling passes through the floor, the cable hole is lined with teak and covered on the underside with an asbestos plate, suitably cut to receive the cables. The plate is secured to the ceiling by all steel expansion bolts which cannot become detached if heated and will only break away if the floor disintegrates. The inside space between and around the cables is packed airtight with bags of asbestos which are individually secured by asbestos string to steel cross bars which cover the outlet to the exchange floor. A wooden cap covers the whole assembly. These precautions will help to ensure that in the event of an outbreak occurring on one floor the flames will not spread via the cable holes to other floors.

Monarch is a 10,000-line exchange and all these lines can, if necessary, be used for subscribers' connections. Direct dialing is possible between Monarch and any other automatic exchange in the area extending over a radius of 10 miles from Oxford Circus. No fewer than 125 automatic exchanges are incorporated in the London director area and further conversions of manual exchanges may be expected in the near future which will ultimately result in creating one of the largest single automatic networks in the world to be embraced in a universal numbering scheme.

(We are indebted to the British Post Office for permission to reproduce this article.)

The Completed Call Your Stock in Trade

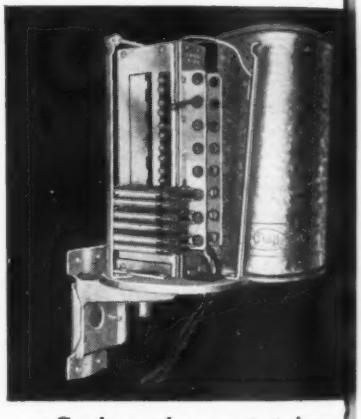
(Concluded from page 14)

were even a half century ago — and more than 600,000 employes in the operating companies of the industry that provide the service.

We in the Northwestern company feel that the greatest benefit to the public and the greatest advantage to all of us in the industry will come from the habit of thinking how new services and improvements in methods in joint operations can best be made to function in the interest of all the public which the whole industry serves. This applies not only to our daily operations but to the planning for future operations in which both you and we are intimately concerned. The physical network of circuits that links us together is steadily growing more and more complex. Our activities touch each other in more ways and at more points.

For instance, the introduction of telephone service for automobiles and other vehicles is a special example of the need for cooperative thinking and planning. Through the joint work of both Independent and Bell people, with both groups making important contributions, mutually satisfactory answers have been found to a wide range of problems.

In the same way the program to extend toll operator dialing has been grounded on full consideration of the situations of all companies, large and

STROMBE
cook type S-2
pole cable termina

Can be used as a protected or u
protected terminal. Made in 6
11, 16, or 26 pair capacity.
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offer the user:
MAXIMUM ECONOMY—because
Type H 20 Protector Units, conta
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are required.
MAXIMUM CONVENIENCE for
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out holes. Self-soldering nozzle
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Trans-Mount System of Protectio
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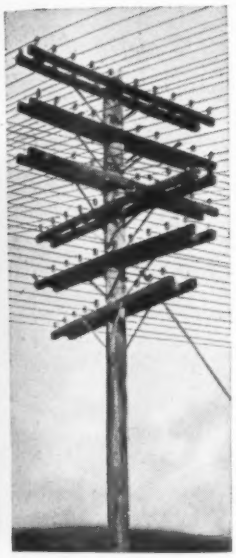

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"dependable" cross-arms

. . . all that the name implies

Cross-Arms made of a uniform grade and expert workmanship by American Cross-Arm, Inc., are available in three types of wood to meet your individual preference:

- Douglas Fir
- Creosoted Yellow Pine
- Gulf-Red Cypress

"Dependable" Cross-Arms are sturdy, well-seasoned, and available now for prompt shipment anywhere in the U. S. A.

for long spans *specify armstrong's glass insulators*

Tests in both field and laboratory have demonstrated that Armstrong's Glass Insulators are actually *stronger than their supporting pins!* This means that Armstrong's Glass Insulators can be used on the longest practicable spans.

Manufactured by automatic precision machinery, these Insulators are checked every step of the way. From batch materials to finished product, they are under rigid chemical, microscopic, and polariscopic control to insure highest physical and electrical properties.

For the finest in glass insulators, specify Armstrong's—used by leading communication systems throughout the world.

They conform to—or exceed—A.S.T.M. standards

this chip tells the story...

of the

Permanent Weld in copperweld

Lathe-turned from a section of a Copperweld billet, this chip clearly illustrates copper and high-strength alloy steel permanently united. The two metals are *welded* to each other and *cannot be separated.* This *permanent weld* is achieved by the exclusive Copperweld process of molten-welding.

By specifying "Copperweld Telephone Line Wire" you are assured of the electrical and mechanical characteristics most vitally needed for dependable and economical service—the high conductivity and corrosion-resistance of copper, plus the rugged strength of steel.

STROMBERG Telephone CARLSON

CARLSON FACTORY, GENERAL OFFICES: ROCHESTER 3, N. Y.

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small, in all parts of the country. This work is being carried on by joint study — without regard to company ownership — and with the utmost regard to customer convenience.

Resumption of the program for the installation of more and more unattended community dial offices offers another example of the way in which units in the industry have teamed up to help answer the many questions that have arisen and will continue to arise in unattended dial operation, particularly with the advent of toll dialing.

This kind of teamwork starts with an attitude of mind. In the Northwestern company we start with the conviction that the industry-wide approach on common problems is essential; that we must look at the whole picture rather than at any part of it; that we will get the best results if we all look at the whole picture together. To this end we shall want to continue to sit down with you and to cooperate with you on the whole range of joint problems and opportunities.

With this kind of cooperative approach we can expect jointly to devise better facilities and to make better and more extended use of them. We will see the means of instant communication made ready at hand everywhere—on land, at sea, and in the air—in more varied and more convenient calls. We can look forward to a service which in speed, in flexibility and in world-wide usage will surpass anything that we have yet known. All of this activity will be directed toward one simple common goal—that two people may talk together, anywhere, at anytime, and preferably on the *first attempt!*

In the Nation's Capital

(Concluded from page 16)

that the occupying army means business as much this year as last, it was announced that Eighth Army officers already had arrested Toshio Yamaguchi, an officer of the Tokyo branch of the Communications Workers Union.

Mr. Yamaguchi was charged with wilfully disobeying an order to restore strike-broken telephone and teletype communication between the Tokyo and Osaka offices of "Mainichi Shimbun," one of Tokyo's leading dailies. The official newspaper of the British occupation forces, "BCON," is printed in the "Mainichi" office, and the strike was hampering its operations.

The next day "Mainichi" carried an editorial blaming Premier Ashida's government for not understanding the true meaning of the "piston strikes" and for bringing on labor disturbances through sheer bungling. General MacArthur, the paper said, was completely justified in banning the strike in view of the plight of Japanese economy today, just as a year ago.

In effect, General MacArthur put his power back of the Ashida government and bade it resist left-wing demands made with a view to bringing about a governmental downfall in the Diet (Parliament) and thereby forcing a general election before summer. All the influence of General MacArthur's governmental section is bent on staving off any such election as a waste of time and money while the nation's primary need is more work.

It is believed at army headquarters that most of the leaders of the communications workers are Communists, though most of the workers and some of the leaders are not. There has been no suggestion as to what would have happened under the MacArthur setup if the telephone and telegraph workers had gone out, in defiance of the general's order. One result might have been to drive the labor union underground as an illegal organization.

One of the arguments hotly contested at this writing is whether a refusal of the United Mine Workers to obey a court order under the Taft-Hartley Act would result in the coal miners union going underground. Facetiously, that might be a good way to get the coal cars rolling again.

V V

>> The United States has about 34 million telephones.

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Neoprene Jacketed Drop and Bridle Wire

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Interior - Tree - Ground - Switchboard - Pothead - Cable Terminal - Instrument

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Answers to Traffic Questions on Page 21

(1) The phrase "Clear this circuit" has been changed to "Clear."

(2) The phrase "Hold this circuit" has been changed to "Hold" when passing or acknowledging a report of NC.

(3) This practice has been discontinued.

(4) Yes. This is done to indicate that the other call order should be cancelled when all calls are disposed of.

(5) No.

HENRY GLASOCK, a youngster of 68 who put the "New" in New London, repairs a telephone wire of his company, the New London (Minn.) Telephone Co. and casts a weather eye on the town, according to a story in the St. Louis *Globe-Democrat*. A native of New London, he returned in 1914 to rebuild both the telephone system and practically every phase of civic life.

Thwarts Suicide Attempt; Operator Awarded Vail Medal

Mrs. Carmella A. Rose Dalpino, former Olyphant, Pa., telephone operator, received Apr. 1 the annual Theodore N. Vail bronze medal award by the Bell Telephone Co. of Pennsylvania for noteworthy public service.

Francis J. Chesterman, president of Pennsylvania Bell said that Mrs. Dalpino's quick thinking and initiative last August saved the life of a Jessup, Pa., man who was trying suicide.

The Vail awards are named in honor of the former president of the American Telephone & Telegraph Co. Mrs. Dalpino is living in New York and is now an operator for the New York Telephone Co.

V V

Receives Two Heroism Awards

Donald F. Gunn of Grand Island, Neb., who received a Vail medal award last September for saving the life of a fellow workman through prompt and continued application of artificial respiration, has been presented with two additional awards in recognition of his heroism. The Northwestern Bell Telephone Co. lineman received the American Red Cross certificate of merit and the president's medal of the national safety council.

V V

Named Manager

Fox Henderson of Dotham, Ala., has been named manager of the Mississippi Valley Telephone Co. to take the place made vacant by the resignation of W. W. Locke, according to a recent announcement.

JOHN LINEMAN OFFERS..

HUBBARD INSULATOR PINS

for

TELEPHONE CONSTRUCTION

In successful telephone construction, many conditions are presented which apparently can be solved only by the use of specially designed insulator pins. The wide variety of Hubbard Insulator Pins insures a satisfactory pin for every construction need.

Hubbard Telephone Pins are furnished with the best grade, properly seasoned wood tops; thoroughly impregnated with paraffin and gauged to a uniform size. Pins are made of high carbon steel with clean threads and square nuts.

†A. T. & T. CO. STANDARD

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STORM GUY ATTACHMENTS ○ SIDE-WALK GUYS ○ SPAN CLAMPS

LAG SCREWS ○ MESSENGER DEAD ENDS ○ CABLE RACKS ○ BRACES

DRIVE HOOKS ○ EXTENSION ARMS ○ POLE STRUTS ○ GUY CLAMPS

POLE STEPS ○ STUBBING BANDS ○ STRAIN PLATES ○ CABLE SHIELDS

GUY PROTECTORS ○ GUY HOOKS ○ MACHINE BOLTS ○ POLE SEATS

GRADE CLAMPS ○ GROUND RODS ○ TRANSPOSITION BRACKETS

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SoundScriber Appoints DeNapoli and Lyon

Lincoln Thompson, president of The SoundScriber Corp., New Haven, Conn., manufacturers of electronic disc dictating equipment, has announced the appointment of A. C. DeNapoli as chief engineer and W. H. Lyon as service manager.

Mr. DeNapoli has been associated, in an engineering capacity, with the sound recording and business equipment industry since his graduation from the Massachusetts Institute of Technology in 1927. During 12 years with the Western Electric Co. in its electrical research products division, he served in a number of engineering capacities and ultimately in the management of one of their important plants manufacturing high quality sound equipment for radio broadcast purposes.

As director of engineering of Films, Inc., he was responsible for the development of a unique automatic talking motion picture system. In addition, Mr. DeNapoli has had several years of specific experience as director of research and development with one of the manufacturers of dictating and sound recording equipment. He is a member of The National Society of Professional Engineers.

William H. Lyon assumes his new post as service manager from the former position of service engineer with SoundScriber. During World War II he was associate engineer in charge of development and procurement of sound recording equipment for all naval use ashore and afloat, in the interior communications section of the Bureau of Ships, Navy Department, Washington. For 10 years prior to the war, Mr. Lyon served as plant engineer with the Cazenovia (N. Y.) Electric Co. and the Cazenovia Telephone Corp. in the field of electric power service and telephone communications. A native of New York State, he studied electrical engineering at Syracuse University.

V V

Emergency Cord Designed For Coaxial Cable Breaks

A flexible, emergency cord, designed to by-pass breaks in coaxial cable and thus facilitate repair operations, has been developed by Bell Telephone Laboratories.

Expected to minimize interruptions of message-packed multi-channel circuits, the repair cord is light, easily handled and will be supplied in a convenient "package" readily transportable to the scene of trouble.

The cord terminates in a plug. When the trouble has been located, the is prepared as for splicing, a j clamped on with a friction type and the plug inserted. Service ca. be immediately restored, before manent repairs are begun.

Length of the cord is somewha. stricted, due to its transmission loss, but specifications call for 50-ft. lengths, which will be suitable for the average repair job.

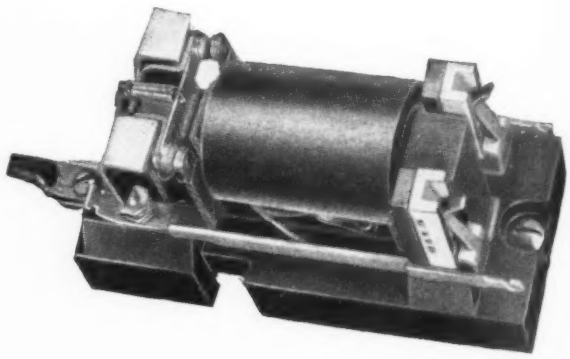
The cord will also be supplied in 600-ft. units, mounted on 16-in. reels. A clip will hold the ends, one with plug and the other with jack, in accessible position. Both ends are made available, in case shorter breaks are to be spanned. Where greater lengths of cable are involved, as many as three of these units may be used in series.

Weight of the cord is only 8.7 pounds per hundred feet. Its central conductor is 20 gauge soft copper. The outer conductor consists of a double braid of soft, tinned copper which corresponds to the copper tube of the coaxial unit. The two conductors are separated by solid polyethylene insulation instead of spaced discs. A protective jacket of polyvinyl chloride covers the outer conductor.

Transmission loss of the cord is about three times as great as that of coaxial cable.

FAHNESTOCK
ELECTRIC COMPANY, INC.

Type 3-A
Arrester Relay



BUCKEYE
TELEPHONE & SUPPLY CO.

COLUMBUS 6, OHIO

Are you troubled with heavy induction from Rural Electrification Lines strung parallel or crossing your rural or toll lines?

While the No. 3-A Arrestor Relay does not eliminate humming and other noises, it will eliminate grounded arrestors due to this induction; it is standard equipment on all major telephone and telegraph systems.

Write for circular regarding the 3-A arrestor relay.